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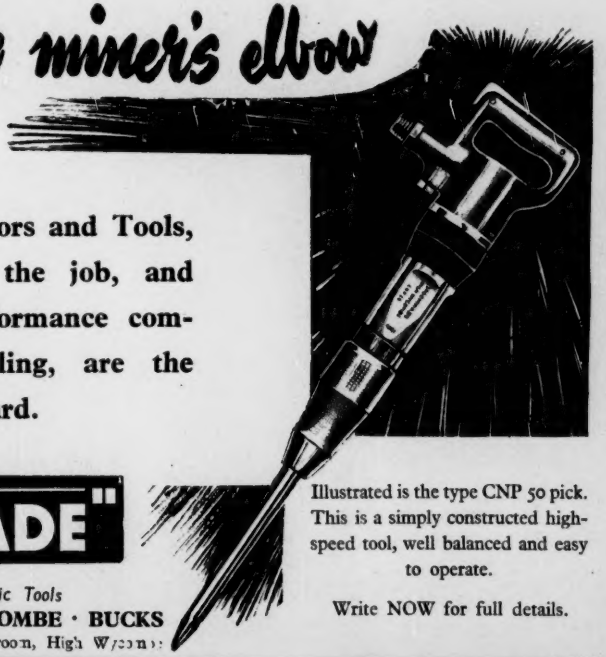

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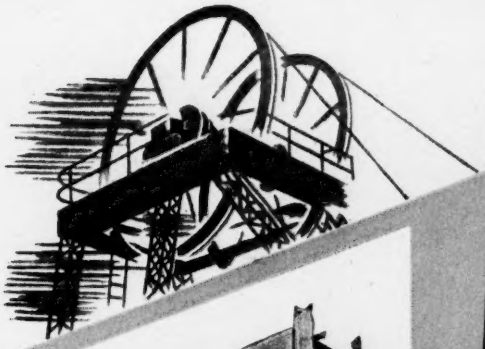

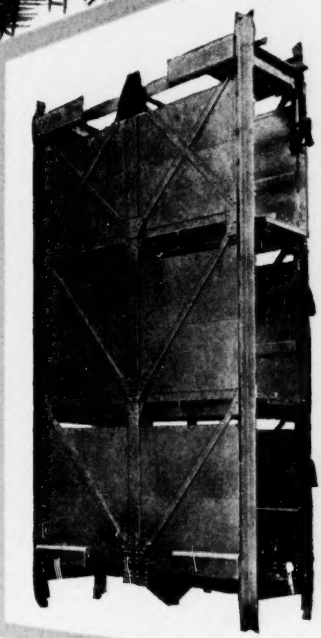

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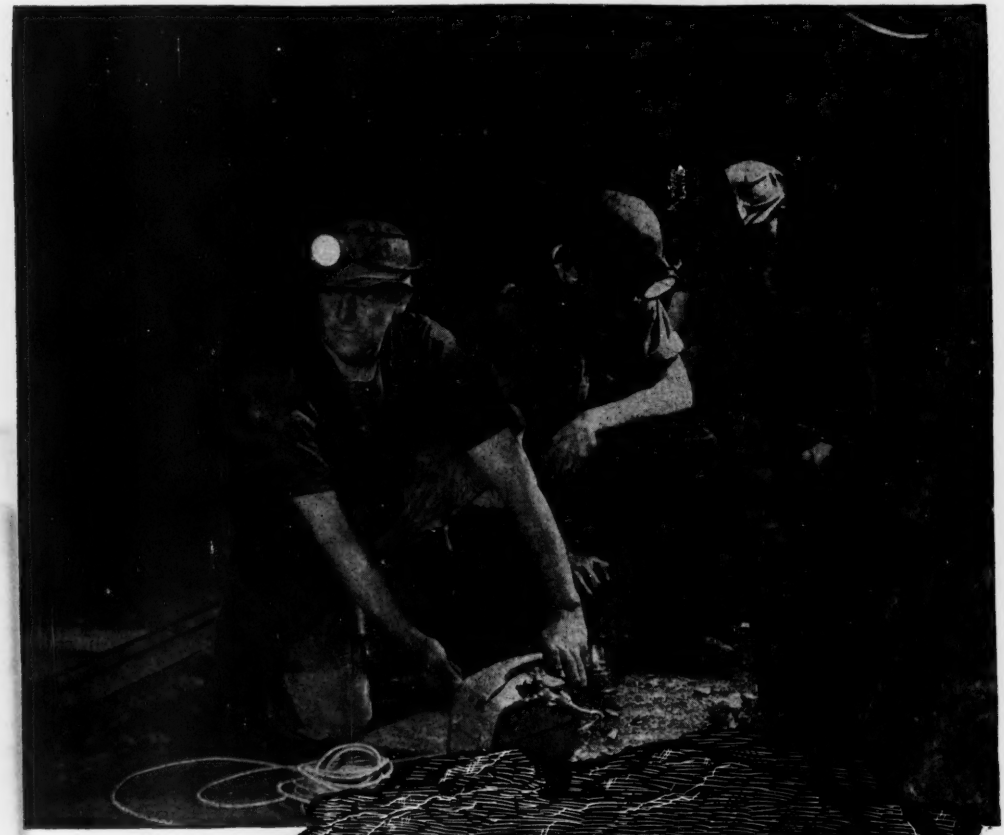

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THIS WEEK'S FEATURES

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NOTES AND COMMENTS

Taxation Allowance for Mineral Development

A world shortage of metals and concentrates is one of the most anxious of the problems which the present international rearmament emergency has created. It has led, and is leading to all kinds of State interference with the normal functioning of the apparatus which has been through years built up for the supply and distribution of the products won from the earth's natural mineral resources. The importance as well as the special characteristics of the mining industry are less appreciated in Great Britain than probably in any other country of similar industrial attainment, and consequently widespread realization of the pernicious effect of the increasing domination of this industry by the Treasury—intent not unnaturally on wringing the last penny of taxation from the community—has been slow, despite the serious efforts of the leaders of the mining industry here to expose its consequences. The most recent warning was afforded by the discussions in the House of Commons on the clauses of the new Finance Act which deal with the resistance of the Government to any alleviation of the burdens imposed on exploration and development of undertakings designed to increase our mineral resources by companies having their headquarters in the United Kingdom. That the Treasury is alive to the resentment created by its coercive policy is shown in the efforts recently made to prohibit the migration of mining companies to countries in which they can enjoy a freer atmosphere. At the beginning of the week an amendment to the Finance Bill was proposed which would provide that any expenditure incurred (in respect of a mineral already worked) in searching for, discovering and testing mineral deposits should not be excluded from allowances permitted under the rules forming part of the Act. While the general principle has been laid down in the Finance Acts of 1945 and 1949 that all capital expenditure for the working of an oil well or mine should be allowed, there is no allowance for exploration unless incurred in the actual "mineral field or oil province" in which a company was already engaged. The wording obviously is extremely obscure, and therefore liable to clog enterprise. The Attorney-General, Sir Frank Soskice, in rejecting the Amendment took the line that the Government had appointed a Royal Commission on taxation last October and they must wait for its report, notwithstanding a recommendation by the Millard Tucker Committee that exploration expenditure, including exploration plant, should be allowed provided it is incurred in searching for a mineral already worked by the company.

However, so strong were the criticisms of this cunctatory attitude that the Attorney General subsequently changed his ground, and intimated that they would not necessarily await the report of the Royal Commission, which might defer any action for a couple of years at least. Perhaps the most telling criticism of the Government's position came from Mr. Aneurin Bevan, who declared that there was not a proper investigation of our mineral wealth that the urgency of the crisis demanded, and strongly urged re-examination of the question to see whether we could not bring our fiscal methods into line with our physical needs. He said he had always taken the view, that where there was a social purpose of importance to be accomplished, either the State should do it, or should make it possible for private enterprise to undertake it. What the State should not do was to be itself inert, and at the same time surround private enterprise with inhibitions which precluded its undertaking the work. The position to-day was that revenue considerations were overlaying physical considerations. He particularly maintained that Great Britain had not been examined by modern methods of exploration. The promise of the Attorney-General that the Government would consider the recommendation of the Millard Tucker Committee is only a very small breach in the Chinese wall of restriction on mining enterprise, but it is at least a suggestion that they are not entirely impervious to reasoned remonstrance. If they need encouragement to adopt a more realistic attitude on the subject, they might well study the policy now being adopted in the United States in the matter of permitting rapid tax amortization write-offs to encourage companies to embark on a bold policy to undertake the development of new mines and the construction of new smelters, refineries and other facilities. The Defence Production Administration has been recommended to approve 137 requests for accelerated amortization of new production facilities covering a total investment $1 billion, of which $778,000,000 has been declared eligible, and of the balance 75 per cent has been allowed for amortization in normal fashion. What this is expected to produce in the way of new metal is set out in our Metals, Minerals and Alloys section, and is a permanent comment on the stand-pat policy represented by the British Government's position at the present time.

U.S. Copper Price Policy Criticized

Commenting on the present U.S. copper price policy, M. Ernest Sengier, chairman of Union Minière du Haut-Katanga, at the annual meeting of that company held in Brussels last week said that the U.S. Government had agreed in May last to a 3 c. rise in the price to be paid for Chilean copper imported into the U.S. At the same time the U.S. suspended until February, 1953, the 2c. import duty under the condition that the monthly average quotation should not fall below 24c. It was these two measures, the chairman said, which had brought about persisting confusion in the market, for it subsequently resulted in two quotations appearing in the U.S.: one for the domestic market with an official price of 24.5c.; the other for the export market at 27.5c., which was generally considered as the world market price.

M. Sengier declared that these two measures rendered difficult any estimate of supplies and demands, even in the near future. It is known, however, he continued, that reserves in the U.S. are partly depleted, that there is no sign of new important copper discoveries in the world, and that additional production may only be obtained by operating more intensively the existing paying mines and by the treatment of low grade ores. Thus, with the world copper output progressing slowly and a demand steadily increasing, rendered particularly acute by reason of the armament programme and stockpiling, the present price of copper would probably have been higher had it not been checked by the mining companies who had voluntarily maintained their selling prices below what they would have been in a market solely subjected to commercial influences. That such is the case, the chairman pointed out, is confirmed by the fact that copper scrap has frequently been sold during the last year on a higher basis than new copper.

Posing the pertinent question as to why copper producers are selling their products below the maximum price they could obtain, at least temporarily, M. Sengier declared that the reason was that they considered it to be contrary to their permanent interest to have prices reaching exaggerated levels. High prices for short periods upset world markets as well as operating programmes, which must be prepared in advance and carried out with a certain regularity and therefore despite short-term advantages, they are no good to anyone.

Geological Exploration in Nigeria

The Report of the Geological Survey in Nigeria for the twelve months ended in March last year is noteworthy for the information that North Maroc, Ltd., had located a tin lode on the western scarp of the Bauchi plateau. The lode is stated to be nearly vertical, and had been opened over an average depth of 35 ft. for a distance of 800 ft. along the strike, and owing to surface configuration could be prospected by adit. In all the years since the opening of the Nigeria tinfields, this is the first occasion, as far as we are aware, of lode tin having been discovered, though unverified reports have from time to time appeared. The Amalgamated Mines of Nigeria have been working rich surface stringers in the granite for some time, but without discovering any veins of economic importance. In the middle of the 'thirties, the existence of deep leads under the basalt became known, but up to the date of the report, no actual mining had been done. The Ngell shaft has been sunk to 182 ft., but further progress was interrupted by water, and the advice of the Cementation Co. was being sought, with what result we do not know.

According to the last Annual Report of the Department of Mines bearing date July 25 of last year, the reserves of cassiterite in Nigeria are given as 98,944 tons of proved and 32,839 tons of indicated mineral, a total of 131,783 tons. Assuming a recovery of 70 per cent metal after smelting, this would represent something like 92,250 tons of tin, assuming that the tonnage of indicated ore is realized, as against an output of, say 9,000 tons, or, say 11-12 years life for the known Nigerian deposits.

The world shortage of columbite, of which Nigeria supplied in the year under consideration about 95 per cent of the world output, appears to have received more attention, but the report points out that the limited reserves will waste progressively with the exhaustion of the tin deposits, and suggests that more attention should be paid to the appreciable losses which occur in the ordinary tin dressing methods.

In Ogoja and Benue provinces, considerable prospecting was done during the year on lead-zinc ores. In lode encouraging results were said to have been obtained in two shallow shafts sunk to 69 and 120 ft. respectively. Excellent ore was encountered in prospecting the Ameka East lode system in shallow prospect shafts, while a borehole at Ameri encountered good ore at a depth of 485 ft. from surface.

Examination of possible radio-active ores proved disappointing as the price offered by the Ministry of Supply was too low to cover extraction costs. Mr. H. Simpson, the Government Geologist made a detailed investigation of the coalfields south of the Benue river as the demand for coal in Nigeria, and for export, continues to increase rapidly. The opening of a new colliery was under consideration during the year.

Examination was also made by the Cameroons Mining Corporation of some areas in the British portion of that former German territory, but the results were disappointing, no minerals of current economic importance being found, and the olivine content of the black sands running about 40 per cent is not sufficiently refractory to be of industrial interest.

Canadian Geological Survey Programme

Late last month the Canadian Minister of Mines and Technical Surveys gave an outline of the geological survey programme for the current year. The survey is being carried out with an eye to assessing Canada's resources of strategic minerals, including tungsten, molybdenum, chromite and antimony, all of which are essential to Canada's defence programme.

The Survey has assigned 88 parties to the field projects which provide for geological investigations and mapping in the north-west Territories, in the Yukon and in each province, with the exception of Prince Edward Island.

The work is to include further examination and mapping in the Quebec-Labrador iron region, mapping of areas believed to be favourable for the occurrence of oil, gas and coal, and examination of uranium-bearing deposits. The staff of a regional office established in Calgary last year will examine the great number of drill cores and cuttings available in that area to aid in the interpretation of the stratigraphy of the oil fields.

Examinations of glacial deposits including gravel, clay, and sand, and the study of groundwater resources will be extended to include the important industrial areas of Montreal and Vancouver.

A special detailed study of the Sydney coal field in Nova Scotia will be continued as an aid to the industry in planning further developments of the coal deposits.

Parties have been assigned as follows: Northwest Territories 7, Yukon 5, British Columbia 16, Alberta 11, Saskatchewan 5, Manitoba 6, Ontario 6, Quebec 7, Quebec-Labrador 4, New Brunswick 3, Nova Scotia 3, Newfoundland 7.

In addition, six geologists will be assigned to strategic mineral investigations in various parts of Canada and two to the investigation of radioactive minerals.

Malaya

(From Our Own Correspondent)

Kuala Lumpur, June 25

Despite the big prices, the outlook for the tin industry in Malaya is not a very cheerful one, by reason of the forced cessation of prospecting for new ground and the narrowing margin between selling prices and costs.

The chairman of every company and the Chief Inspector of Mines repeatedly draw public and government attention to prospecting. Recent discussions with senior representatives of five of the larger tin companies disclose that all prospecting remains at a complete standstill. Emergency conditions are proving that it is impossible to place parties in the field. Another trouble is the reluctance of graduates from mining schools to make a career in Malaya. It is by these that supervision of prospecting is done. The Mines Department from a number of causes have lost eight members this year.

Recently this Department organized a section to indulge in prospecting. The idea apparently being to ensure that no potential ore reserves were left unmined. To date their activity, just commenced, has been to bore on areas readily accessible and covered by applications from private individuals or companies. This is no help.

LACK OF SECURITY

Most of the readily accessible areas are known but can not be reached due to lack of security. It has recently come to our notice that boring permits have been withdrawn, or renewals refused, because the police will not allow prospecting parties to visit the areas in question. Opening of mines in outlying areas is categorically refused on occasions. With current efforts to regroup labour on mines and estates, resettlement of squatters and now, restriction of food movement, it would appear that considerable time will elapse before other than the larger established areas will see new, or continued mining or prospecting activity.

In this regard, reference may be made to four known past producers of wolfram. In spite of world shortage and demand, and the fact that the Colonial Secretary assured a questioner in the House recently that all steps were being taken in Burma to ensure supplies of strategic minerals from there, no activity is possible in this country. All four producers are in uncontrolled territory and cannot be visited let alone re-opened.

Local representatives of tin and rubber appear to have dispelled Government's intentions regarding profit freezing. They are now turning to purchase tax on luxury articles (no definition of these is forthcoming) and increased income tax as a means of countering inflation. Lorry registration has been increased. As considerable traffic is carried by this means general costs must increase.

TIN PRICE AND PRODUCTION

The recent drop in price to £425.00 a picul distressed the small producer; the consensus of opinion being that a price of $400 per picul (about £800 per ton London) would result in a number of them closing down.

The Chinese gravel pump mine operates an 8 in. unit as a general rule. This, a year ago, used to cost an average of $7,000.00 per month to run. It now costs $10,000.00 to $12,000.00. This is only partially occasioned by increased wages which are on a bonus basis locked to the price of tin. A plank 14 ft. x 1 ft. x 1½ ft. for the flumes, which used to cost $3.50 now costs over $9.50. In a flume 140 ft. long by 18 ft. wide, this represents a considerable expense. Other timber has also increased. These costs will not materially drop with any drop in tin price. Cast iron liners are now costing 43c. per lb. A recent increase in foundry workers' wages will affect this further.

The miner, basing his return on 75 per cent ore, after paying cess, receives some 62 per cent net at mine of the price per picul. This means—at $400.00 per picul, a price to the miner of $248.00 per picul, or, on the basis on which the Chinese miner works, 50 piculs per month to cover expenses. A number of smaller miners are producing very little more than this. Some not as much.

It is the general consensus of opinion that within ten years 50 per cent of the Chinese mines will have exhausted their ore reserves or, unless they have reduced their operating costs, will not be able to operate at a profit. This aspect is fully appreciated and agreed to by everyone concerned. Due to the general insecurity there is a marked reluctance on the part of the Chinese to venture far from the present centres.

Tin production has dropped in recent months. The Government will soon have to admit to the Tin Study Group that their estimates of production were too high.

The repair of the Bungsar Power Station will alleviate the position to some extent in Selangor, but will not materially affect the picture. The opening of the second half of the Connaught Bridge Power Station in 1954/55 (?) will be of assistance to the small man who can instal electrical machinery on small unworked areas of a few acres. This may steady production to some extent, but may well be offset by the loss of production from some of the larger Chinese mines.

Norwegian Metal Statistics 1950

Once again Norwegian trading figures showed a heavy excess of imports over exports, writes our correspondent in Norway. Imports were valued at Kr.4,846,455,000 (Kr.4,221,202,000 in 1949); while exports were valued at Kr.2,787,243,000 (Kr.2,136,602,000 in 1949). This left an excess of imports over exports of Kr.2,059,212,000 (Kr.2,084,600,000 in 1949).

There were increases in imports of chrome ore at 52,462 tonnes (39,872); bauxite, 37,157 tonnes (24,474); alumina, 81,012 tonnes (65,247); iron ore 15,947 tonnes (nil); cryolite, 3,228 tonnes (2,620); limestone, 6,260 tonnes (4,172); raw platinum, 26,563 grammes, with 27 kilos of fabricated platinum. Fabricated silver increased to 22,576 kilos (19,516). On the other hand decreases were shown in zinc ore at 71,237 tonnes (85,003); coal imports were less at 974,528 tonnes, from foreign countries and 326,818 tonnes from Spitzbergen. There was a small decline in gypsum at 23,401 tonnes (24,494); and manganese ore at 162,176 tonnes (166,570).

As regards non-ferrous metals, there were increases in raw aluminium at 1,013,651 kilo (479,260), and tin at 448,186 kilos (200,441). Copper, however, was considerably lower at 2,428,051 kilos (3,247,171).

Increases were shown in iron and steel, including the following: ferro manganese, 83,497 tonnes (53,727); ferro-silicon, 53,652 tonnes (40,993); ferro-chrome, 16,411 tonnes (14,793); ferro-silicon-manganese, 19,490 tonnes (8,151); calcium carbide, 25,155 tonnes (19,915). Pig iron improved to 26,514 tonnes (19,405); raw copper made 9,053 tonnes (7,163); copper scrap and alloys, 2,150 tonnes (1,593); raw aluminium, 40,351 tonnes (21,931); raw zinc, 33,148 tonnes (29,364); nickel, 9,800 tonnes (7,540). Exports of iron ore improved to 283,033 tonnes (203,527). Sulphur exports increased to 76,162 tonnes (62,341) and mica to 571,390 kilos (112,619). Iron pyrites was lower at 389,066 tonnes (413,427); as were exports of graphite at 1,902 tonnes (2,196). In the fertilizer trade, nitrate of lime improved to 743,628 tonnes (546,801); nitrate of soda totalled 5,898 tonnes (1,826); nitrate of ammonia totalled 1,858 tonnes (1,261), and calcium cyanamide, 42,960 tonnes (40,783).

Sulphur Recovery in Germany

By A. GRAHAM THOMSON

The necessity for conserving sulphur and developing alternative sources of supply is directing renewed attention to the methods adopted in Germany to overcome a similar shortage lasting for a prolonged period. A wealth of information on sulphur recovery is contained in captured German documents and microfilms, as well as in the well-known reports by Allied investigators. All this material is held by the Technical Information and Documents Unit for the benefit of British industry.

Long before the 1939-1945 war, the German Government recognized the importance of economizing in sulphur and so reducing their country's critical dependence on supplies from overseas. An organization known as Schwefel G.m.b.H., Berlin, was responsible for collecting data relating to sulphur and sulphur recovery. From documents issued by this organization it is known, for example, that in the year 1943-44 a total of approximately 90,000 tons of sulphur was recovered from sulphur-containing wastes, including industrial gases. In addition, economies were made through the setting up of plants for the manufacture of sulphuric acid from anhydrite. Through this project alone, 20,000 tons of sulphur was saved in 1943.

SULPHURIC ACID FROM ANHYDRITE PLANT AT WOLFEN

At Wolfen, Saxony, I.G. Farbenindustrie established a plant for the production of sulphuric acid and cement from anhydrite. So far as is known, the process is only worked at three other places in the world, one of them being at Billingham. Its basis is the reduction of calcium sulphate with coke. To facilitate the reaction, sufficient clay is added to lead to the formation of Portland cement clinker in place of lime. The formation of sulphur trioxide proceeds catalytically, using a vanadium catalyst, and by the addition of water, sulphuric acid is then produced. Experiments were also carried out in connection with the production of sulphur from anhydrite, without, at the same time, acquiring valuable by-products such as cement. These experiments did not, however, result in the erection of large-scale plants, since the method was not considered economic.

SULPHUR RECOVERY FROM RUHR COAL

By the end of 1944, the Germans had recovered 70 per cent of the available sulphur in Ruhr coal. Considerable difficulties were reported to have been experienced in connection with the building of additional plant in coal-washeries to handle the separation of pyrites. In 1943, the Germans recovered 15,000 tons of pyrites from hard coal and an additional 20,000 tons from brown coal. By that time, ten plants had been installed in the Ruhr, about 50 per cent of the pyrites present being recovered as a product which met the required specification. Eight additional plants were planned, and it was estimated that about 120,000 tons a year could be produced from all Ruhr collieries.

Two types of jig were used to treat colliery refuse smaller than 10 mm. in size. Pulsator jigs, operating at 150 pulsations a minute, treated raw materials up to 10 mm. Vibrating jigs, operating at 350 vibrations per minute, were used for material up to 1mm. The vibrations were induced by means of a rubber diaphragm forming part of the bottom or side of the jig. For convenience, wash-boxes about 1 sq. metre in size were employed, the throughput being about two tons per hour. These wash-boxes might have an artificial bed composed of relatively large particles of pyrites. The fine material normally contains 5-10 per cent pyrites, up to 15 per cent being recoverable at a cost of RM15-20 per ton. The specification for washed pyrites called for a sulphur content exceeding 40 per cent and a carbon content under 4 per cent. In practice, sulphur contents were up to 44 per cent and carbon down to 2 per cent.

The production of elementary sulphur from pyrites was extensively studied in Germany, and there are several detailed reports on various tentative processes. None of these, however, was developed beyond a pilot-plant stage, and it is assumed that they were considered to be uneconomic. From the material available to T.I.D.U., there appears to be no conclusive evidence that elementary sulphur was produced on a large scale from pyrites in Germany. A new process was said to have been developed, however, by the Thyssen'sche Gas und Wasserwerke of Hambern. This involved the burning of pyrites in steam and oxygen to give H_2S and SO_2 in the correct proportion for their interaction to form sulphur. The advantage claimed for this process was that it allowed pyrites containing only 20 per cent sulphur to be used.

The production of sulphur from spent oxide was carried out by the usual method of extracting with carbon disulphide. Where the tar content of the spent oxide was higher than .2 per cent, the sulphur was subsequently purified with oleum, or by extraction with methylene chloride.

OLEUM PROCESS

The oleum process was used at the Ruhrgas A. G. Gelsenkirchen-Horst and appeared to be satisfactory for the purification of sulphur where all the impurities were organic materials. Used iron oxide gas is shipped from the various Ruhrgas A. G. gas plants to a central plant for sulphur recovery. The iron oxide contains about 40 per cent sulphur, which is recovered by extraction with carbon disulphide. In extracting the sulphur, some tar and other organic materials are dissolved from the iron oxide, about 2 per cent of organic impurities being present in the sulphur. These give the sulphur a black colour and make it useless for many of the purposes for which elemental sulphur is required.

In this plant the impurities are removed by reaction with 20 per cent oleum. The carbon disulphide solution from the extraction contains 30 per cent sulphur and is run into Reactor No. 1, where it is mixed with used oleum from Reactor No. 2. The mixture is then allowed to stand until the two layers separate. The oleum is drained off and discarded. The solution of sulphur in carbon disulphide is run into Reactor No. 2, mixed with fresh 20 per cent oleum, and separated in the same manner as before. The oleum in this reactor goes to Reactor No. 1 and the carbon disulphide solution to a third reactor, in which it is washed with a dilute solution of sodium car-

bonate. The used sodium carbonate solution is discarded and the carbon disulphide solution is washed with water. The purified solution of sulphur in carbon disulphide goes to the sulphur recovery plant, where sulphur is recovered by distilling off the carbon disulphide. Sulphur produced in this manner has a bright yellow colour and a purity of 99.95 per cent.

THREE CLASSES OF RECOVERY METHODS

The various methods adopted for sulphur recovery can be conveniently classified as dry recovery processes, wet recovery processes, and processes in which an organic liquid is used as the scrubbing medium.

The use of iron oxide is probably the oldest known process of sulphur recovery, some 70,000 tons of this material being required annually for this purpose in the Ruhr alone. The iron oxide reacts with hydrogen sulphide, so that the presence of another substance to increase the alkalinity of the medium is advantageous. Thus, traces of ammonia have been used in Germany to increase the rate of absorption of hydrogen sulphide. Where the concentration of hydrogen sulphide in the gas was low—*e.g.*, in producer gas or water gas—active carbon ("Carbonerit") was often used in place of iron oxide. The absorption over "Carbonerit" was followed by scrubbing with ammonium sulphide or CS_2.

In wet recovery processes, the oxygen carrier is present either in solution or in colloidal suspension. In the "Thylox" process a salt of thio-arsenic is used. In the potash process the scrubbing medium is potassium hydroxide, which is subsequently warmed to release hydrogen sulphide. A solution of complex cyanides is employed in the Staatsminjen-Otto process. The "Katasulf" process, developed by the I.G., is based on the oxidation, of hydrogen sulphide gas to SO_2, which is absorbed by ammonia. This process is specially suited to coke oven gases where ammonia is available on the site.

THE "GIRBOTOL" AND "ALKAZID" PROCESS

The two most important processes using an organic scrubbing agent were the "Girbotol" and the "Alkazid." Both are essentially enriching processes, in that the hydrogen-sulphide containing gases are led through organic absorbing agents, and subsequently a gas rich in hydrogen sulphide is released, thus providing the first stage in sulphur recovery proper. The hydrogen sulphide is then oxidized, either to sulphur in Claus ovens, or directly to sulphuric acid in the "Lurgi" process.

Probably the most important of all German recovery processes was the "Alkazid" process, coupled with the catalytic oxidation of hydrogen sulphide in Claus ovens. "Alkazid" (or "Alkacid") is a chemical compound used in solution in water as an absorbent for hydrogen sulphide and carbon dioxide in a manner similar to the use of ethanolamine in the "Girbotol" process. The chemical compound originally used was the alkali salt of amino propionic acid, but the Germans subsequently developed quite a number of compounds for this purpose.

PRODUCTION OF LIQUID SULPHUR DIOXIDE

A process for the production of liquid sulphur dioxide was operated by I. G. Farben at Wolfen in conjunction with the cement-sulphuric acid plant. The basis of the process was the absorption of sulphur dioxide from the gases leaving the cement kilns by means of a mixture of xylidine and water at ordinary temperatures, giving an aqueous solution of xylidine sulphate.

This solution was raised to a temperature of about 100°C., at which point an emulsion of xylidine and water was regenerated and 100 per cent SO_2 evolved. This was dried and liquefied under pressure. Reference may also be made to a successful pilot plant experiment for the production of very pure sulphur from sulphur dioxide by reducing with hydrogen.

The Lurgi Gesellschaft manufactured and installed plant for sulphite pulp making. Three installations were supplied for concentrating sulphite waste liquor. All these were originally installed for the purpose of avoiding stream pollution, the intention being to burn the concentrate, which had a fuel value of about 2,000 calories per kg. All three companies, however, were eventually able to dispose of the concentrate for use as a binder for foundry work and briquettes.

A small extraction plant was installed for the recovery of sulphur from wastage and spillage at plants of the Chemische Fabrik Belward, Hamburg. The material was treated with carbon bisulphate, the resulting solution being passed on to the distillery for distilling in the usual way.

WET COOLANT PROCESS

The experimental production of sulphuric acid from spent gas by a wet coolant process was undertaken at the Frankfurt City Gasworks in a pilot plant designed by Lurgi. The gas liquor received at the pilot plant contained 3-4 gm. of H_2S per litre. In the Frankfurt town gas plant the ammonia produced in the retorts was recovered by a process in which approximately one-third of the H_2S also present was recovered as ammonium sulphides. These were passed through a steam-heated still in which CO_2, H_2S and NH_3 were liberated. The gases then passed into a saturator where the ammonia was neutralized with sulphuric acid for the production of ammonium sulphate. The water gases from this solution were cooled to reduce the water content before being burnt with excess air to produce SO_2. The wet SO_2, together with sufficient air for further oxidation, passed on to a converter packed with vanadium catalyst and thence to a condenser-absorber. A larger unit was subsequently installed in the Ruhr and was reported to have given conversion efficiencies of 95-98 per cent.

This process was considered by some technical experts in Germany as likely to find application in the treatment of by-products arising from the distillation of coal, the combustion of liquids, and in the natural gas industry. It was evident, however, that in the Frankfurt pilot plant, which had been closed down for some years when visited by British investigators after the war, the design and construction of the absorber-condenser still presented difficulties which could not easily be overcome. The larger plant in the Ruhr was not located by the investigators.

OTHER INTERESTING DEVELOPMENTS

Among many other interesting developments in Germany were the recovery of SO_2 from magnesium oxide by the reduction of magnesium sulphate, and experiments on the thermal decomposition of nickel sulphate. The former process was operated on a plant scale to produce 55 tons of sulphuric acid per day, which was sold to the rayon industry.

Details of all these processes are available in the documents held by T.I.D.U. In many cases, the technical information includes plant lay-out, detailed drawings, operating instructions, etc. Other documents contain technical data obtained in the development or pilot plant stage, while others again describe laboratory tests in connection with new projects.

Mexican Tin Deposits Re-assessed

Reassessment of North America's best-known desposits of tin, the placer and mother-lode areas of Durango, Mexico, shows that this district can probably produce from 150 to 300 tons annually according to a statement by the recent Secretary of Interior, Mr. Oscar L. Chapman. This picture could change if a more economical or practical method of extracting metal from the ore is developed, thus making it feasible to use large-scale methods to mine bedrock deposits.

Up to the present time, most of the tin from this area has been produced by hand methods, and there are indications that the placer grounds which, to date, have produced the greater part of the tin, are faced with gradual exhaustion. According to the latest available figure for U.S. tin consumption, the country imports about 37,500 l.tons of tin each year and in return has been the world's principal source of tin plate (*sic.*).

WORK IN DURANGO STATE

A re-valuation of the economic value of the Durango tin deposits, based upon examination of the outstanding districts in the State during 1944, has been published as *Geological Survey Bulletin* (962-D.). The work was done by Messrs. Ward C. Smith, Kenneth Segerstrom, and Reinaldo Guiza, Jr., in co-operation with the Universidad Nacional Autonoma de Mexico, Instituto de Geologia, and Comité Directivo para la Investigacion de los Recursos Minerales de Mexico. The project was under the auspices of the Interdepartmental Committee on Scientific and Cultural Co-operation, Department of State.

At the time this study was made there were four concentrating plants, built by the State in operation in Durango. This marked the first strong effort in 50 years to introduce large-scale machine methods in a region where mining and milling have been carried on almost entirely by hand.

The authors conclude however, that the bodies of tin ore are too small and pockety and too low in average grade for profitable mining and milling by large-scale methods at the then price of tin. "By November, 1944, all the new mills had shut down," the report says. "One ran intermittently for several months, two made only short trial runs, and the fourth was never completed."

The report, which contains maps and charts, deals chiefly with the vein deposits and mentions the placers only incidentally. The general distribution of the placer grounds and their approximate grades are known, but to have made detailed surveys or to sample them adequately would have required expenditures not provided for. However, the authors estimate that placers produce about three-fourths of the tin concentrates recovered in Durango.

The workers or *gambucinos* have the scantiest possible equipment and work independently. The usual practice in working the narrow veins is to follow them with a minimum of excavation, digging out the material with picks, and removing as little as possible of the barren wall rocks.

PRIMITIVE METHODS USED

The material mined is hoisted with a simple hand windlass or carried out on a man's back, sorted and crushed by hand, and washed on a *planilla*, a gently sloping platform of earth or flat rocks built at the mine portal. If the cassiterite is in small grains, nearly half of it may be lost in washing. But usually the recovery is better than half. Very little valuable ore is left in sight in an abandoned mine, and little goes into the dumps. For most of the miners a modest return makes the work profitable.

Indian Oil-from-Coal Project

In a Bulletin of the Geological Survey of India (Series A—Economic Geology) recently received, there appears a preliminary report on coal suitable for the manufacture of synthetic petroleum. This report describes the result of an investigation following on the Indian Government's decision to explore the possibilities of manufacturing synthetic petroleum from low-grade coal. The objective was to locate coal of a particular grade which could be cheaply and rapidly mined by opencast methods, to produce 1,000,000 tons of oil annually for at least 30 years.

In search of quarriable coals suitable for the manufacture of synthetic petroleum at two provisionally selected sites—one near Ondal in the Raniganj coalfield and the other near Ramgarh, which is centrally situated in respect to the Bokaro, Ramgarh and Karanpura coalfields—detailed investigations were carried out. In the Toposi-Jambad-Kajora and Ondal areas in the East Raniganj coalfield, several coal seams suitable for quarrying have been selected. These seams have a maximum thickness of 40 ft., have low angles of dip and the ash content of the coal varies from 12 to 20 per cent. The reserves of coal, up to overburden thrice the thickness of the seams, are over 200,000,000 tons.

THICKNESS OF SEAMS

In the eastern portion of the Bokaro coalfield, seams sometimes attaining a thickness exceeding 100 ft. have been observed, while in the western part the thickness seldom exceeds 35 ft. The dip of the seams generally varies from 5° to 20°. The coals are of both caking and non-caking varieties and the ash percentage is between 15 and 30. The quantity of coal up to overburden thrice the thickness of the seams, has been calculated to be over 220,000,000 tons. In the Ramgarh coalfield, some of the coal seams are over 50 ft. in thickness and the angle of dip usually varies from 5° to 15°. The coals are generally of the non-caking type and vary in quality. The reserves of the coals up to overburden three times the thickness of the seams are over 55,000,000 tons. In the Karanpura coalfield, the thickness of some of the coal seams is over 50 ft. The dip of the seams usually varies from 10° to 25° and the ash content of the coals is between 11 and 33 per cent. The reserves of coal up to overburden thrice the thickness of the seams in the Argada-Sirka-Religara area are over 55,000,000 tons, in the Bhurkunda-Saunda area nearly 40,000,000 tons and in the Khalari area well over 4,500,000 tons.

The Damodar river is either passing through or within easy reach of the coalfields under investigation. A sufficient supply of water will be available in the East Raniganj coalfield throughout the year when the dams on this river are constructed; the water supply position in the other three coalfields, however, will not be clear until the catchment area is surveyed to assess the total discharge available.

From the information available it appears that the establishment of a synthetic oil plant is a practical proposition in the Ondal area. In the Bokaro, Ramgarh and Karanpura coalfields, after considering the water supply position, either a central plant may be erected at a site suitable from the point of view of the raw materials as well as the water supply, or several smaller plants may be constructed at the different coalfields after full investigations have been carried out in respect of the water resources and means of their augmentation.

Imperial Smelting Corporation's Impressive Contribution to British Industry

The Bristol Industries Exhibition, which has been held during the past two weeks has, among other achievements, provided one of the rare occasions on which the work of the Imperial Smelting Corporation has been dispslayed to the man in the street. This display, arranged with considerable skill and imagination, has provided the inspiration for a brief note on an organization essential to this country.

The years after the First World War found Great Britain almost entirely dependent on foreign suppliers for its zinc. Once the urgency of war production had subsided, British smelters mainly with obsolete or inadequate equipment proved unable to compete with the larger and more modern plants existing abroad, notably in Germany, Belgium and the U.S., and by 1930, when the Government withdrew the subsidy which had provided the industry with some degree of assistance in the previous decade, the only works still operating were those at Avonmouth and Swansea, owned by the recently formed Imperial Smelting Corporation, and the works at Seaton Carew then operated by the Sulphide Corporation and later transferred to the Imperial Smelting Corporation but now shut down.

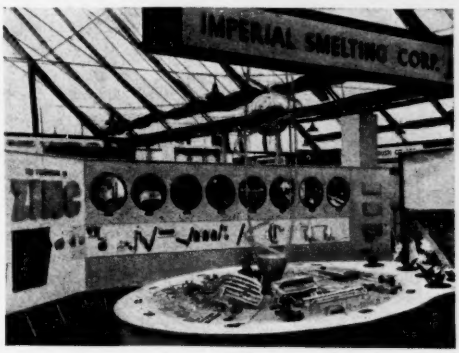
GUIDING PRINCIPLES

For these surviving works, the lesson of the 'twenties was clear. Survival for the British zinc industry—entirely dependent as it was and still is on foreign ores imported from great distances and, consequently, bearing high freight costs—depended achieving the highest state of efficiency in each metallurgical process, coupled with a maximum utilization of all recoverable by-products. It has been the consistent application of these guiding principles which has brought the Imperial Smelting Corporation, now our only zinc smelter, to the point where it is to-day producing about one-third of the country's zinc requirements and about 12 per cent of the sulphuric acid consumed, as well as some 150 tons per annum of cadmium and smaller quantities of arsenic, thallium and other metals.

The most important single step to have been taken by the Corporation in the modernizing of its plant was the installation in the early 'thirties of the first vertical retort zinc distillation plant to be built outside the U.S.A. (*Mining Journal*, December 17, 1938, p. 1157). At the time, the process, a working model of which constitutes the main feature of the Exhibition Stand, represented a considerable advance in retort practice, and in the intervening years this method has been further improved to the point where its superiority over the older horizontal retort is now unquestioned. Apart from Avonmouth, the only other vertical plants in operation are in America (three) and Germany. The horizontal retort remains, however, in active use at Avonmouth as elsewhere, due to the high level of demand which persists, and it will be some years yet before the Corporation will have turned over entirely to the vertical retort. At present, the Corporation is treating around 170,000 tons of concentrates per year, from which about 70,000 tons of zinc are recovered.

At about the same time (1934) the Corporation also installed an American designed redistillation plant, using a refluxing column. This redistillation yields the very high purity zinc (99.99 per cent) from vertical retorted metal, which is essential for zinc alloy die castings, and to-day absorbs about 20 per cent of the furnace output.

The Broken Hill mines of the Zinc Corporation in New South Wales have always been Avonmouth's principal source of supply of zinc concentrates, and the close association which existed between these two concerns was an important factor in the establishment of the Consolidated Zinc Corporation two years ago. Under this parent company, the Imperial Smelting Corporation and the Zinc Corporation, as well as the Broken Hill Corporation and the Sulphide Corporation, all became subsidiary companies in the one group. The Imperial Smelting Corporation thus became responsible for all the group's activities in the U.K. These, in addition to the smelter at Avonmouth and



A View of the Imperial Smelting Corporation's Stand at the Bristol Industries Exhibition

Swansea, consist of sulphuric acid plants at Newport, Mon., and Seaton Carew; zinc die casting alloys at Bloxwich; the zinc oxide and zinc dust works of Frickers Metal & Chemical Co. at Luton and Burry Port; lithopone at their Widnes works; and aluminium sulphate, the "Cuprinol" range of tube and textile preservatives, arsenic metal, and vanadium catalyst—all at Avonmouth.

SUBSIDIARY COMPANY'S ACTIVITIES

In addition, the Corporation controls a subsidiary—Anglo Austral Mines Ltd.—which mines barytes and fluorspar. The barytes, essential to the production of barium sulphate for lithopone, is mined at Cow Green and Dubbysike Mines in Durham and at Gasswater in Ayrshire, and together supply the Widnes works with some hundreds of tons of barytes per week. In view of the Corporation's increasing stake in the rapidly developing fluorine industry and its consequently growing need for anhydrous hydrofluoric acid, the Corporation's needs for increasing tonnages of high grade fluorspar has led the Anglo Austral Mines to establish a flotation plant at Nenthead in Cumberland, which is at present reclaiming fluorspar from large mined dumps at Rotherhope Mine in the west of Cumberland, pending the reopening of the old Heights Mine in Weardale, Durham, for which the Austral mines has obtained a mining concession, and on which development is now in progress.

Machinery & Equipment

Bristol to Test Helicopter in Tropics

Geologists, prospectors and mining engineers will be interested in the announcement of the Bristol Aeroplane Co. that a "Bristol" type 171 MK 3 helicopter arrived in Khartoum on June 22 for tropical trials which will be carried out in collaboration with the Ministry of Supply.

The increasing value of helicopters for geological survey work has been convincingly demonstrated in many parts of the world, and its hovering capabilities enable the geologist to pick out essential topographical features without difficulty. Furthermore, the use of helicopters has put preliminary prospecting and other similar work on a "commuting basis" doing away with the former laborious planning of camp sites and long journeys each day from camp to the desired place of operations.

The helicopter was flown from England in the hold of a Bristol freighter. The rotor blades and rotor head being loaded separately, but the complete fuselage of the Type 171—nearly 42 ft. long—was loaded in one piece by being canted at an angle across the hold. Loading was facilitated by means of a pulley secured to the floor of the hold and the helicopter fuselage mounted on a two-wheeled bogey.

New Hunslet Diesel Locomotive Built in South Africa

The first of an entirely new design of Hunslet 34 h.p. 5-ton Diesel mine locomotive has recently been completed by Hunslet Africa (Pty.) Ltd. for an O.F.S. gold mining company for heavy tramming duties. Many interesting features have been included after careful study of local conditions and in the light of previous Hunslet experience, particularly on various classes of underground locomotive haulage in other parts of the world. Indeed, following the company's practice, a complete new design was made as soon as it was found that existing standard types were not exactly what was required for South African conditions.

The locomotive is claimed to be the most compact Diesel locomotive of its power and weight, yet this has been achieved without loss of accessibility, either as regards the Gardner Diesel engine or the Hunslet transmission, the electrical system or the running gear. Length over buffer beams is only 7 ft., the overall width (2 ft. gauge) 3 ft. 1 in.; and the height above rail level 4 ft. 6½ in. With this compactness there are but a few of the older mines where the locomotive cannot enter the cage, thus making it simple to move the locomotive from one level to another. If desired, it can quickly be brought to the surface for servicing.

The manufacturers state that the performance of this locomotive has proved to be outstanding: reliability is of the highest order; wear is at low rate; combustion excellent, resulting in a clean exhaust, economy and cool running, and the very minimum CO content; there is effective control throughout the speed range, exercised by the Gardner governor, which not only avoids stalling when hauling at minimum speed, but also prevents smoking during acceleration to a degree seldom obtained.

As a result of the company's experience in this field, which is incorporated in the latest jet-type exhaust gas conditioners, it is possible to obtain a high degree of scrubbing of the small quantities of noxious gases emitted, thus giving the least possible contamination of mine air.

The locomotive has two speeds of up to 4¼ and 8 m.p.h. in either direction. These and the engine speed are controlled by a single lever which automatically ensures that, when changing gear, the main clutch is fully released and the shaft brake brought into effect at the appropriate time. Grease-gun lubrication is provided for the coupling rod bushes, the design being arranged to provide a reservoir of lubricant sufficient for running throughout a shift.

The locomotive frames follow the best main-line practice and are cut from rolled steel plate, but they are exceptionally massive for the size of locomotive, being of 2-in. plate, with 2-in. footplates, 2-in. plate cross stays, and 1-in. plate cross stretchers, and having heavy section horn stays, and stiffeners.

Two dozen of these locomotives are at present under construction for 2 ft., 2 ft. 6 in., and 3 ft. rail gauges, and are the first ever to be designed and built in South Africa by any British locomotive builder.

The Holman S.L.280 Sinker-Airleg Combination

A further development of the popular Handril-Airleg-Holbit rock drill combination, is the mounting of the powerful S.L.280 sinker on an airleg, described in Leaflet D.1096/51, obtainable from Holman Bros., Ltd., Camborne, Cornwall.

The S.L.280, a machine with 3½ in. bore, is generally considered sufficiently powerful for use in most formations and Holman Sinkers of this size have long been widely used in mining and quarrying. Each model has been an improvement in one or more respects on the machine it has superseded, and the latest—the S.L.280—is the result of over 70 years experience in the manufacture of rock drills.

Because of the powerful rotation and the extremely rapid and positive action of the Holman circular type valve, drilling speed has been increased without additional air consumption. The machine is supplied either with throttle-controlled blowing or, to comply with dustless drilling regulations, with vented front head. In order to make such a powerful machine more convenient for the operator, the handle is free to move up and down on the slides of the cylinder, and springs to absorb shock are fitted above and below the boss to which it is attached. These, with other features, are reported to have gained for the S.L.280 a reputation which has been increased by the success recently achieved by deep shaft sinking in the O.F.S. gold mines.

The S.L.280 Airleg combination is capable of penetration speeds twice as great as those obtained with the normal Handril-Airleg combination. Therefore, with the Sinker-Airleg, the larger holes required for a burn cut may be drilled at the same time as the other holes of the round are being put in with lighter equipment.

The specially designed quick release clamp makes it possible to remove the Sinker quickly and easily from the Airleg whenever the machine is required for shaft sinking or for other heavy drilling work that has to be done with a hand-held machine.

Abridged specifications are:

Airleg: piston dia. 2¾ in.; length closed 56 in.; feed length 36 in.; weight 38 lb.

S.L.280 Sinker: bore 3½ in.; stroke 3 1/16 in.; length 30 in.; weight 122 lb. (wet), 120 lb. (dry).

The lengths and weights stated include spring handle and lugged steel chuck. Other types of chucks are available.

David Brown Gear Type Flexible Couplings

David Brown & Sons (Huddersfield) Ltd., Park Gear Works, Huddersfield, have recently issued a new leaflet illustrating their gear type flexible couplings, which they have standardized in series.

This range of couplings is complimentary to the company's "Cone-Ring" flexible couplings. Whereas the latter are designed primarily to give torsional flexibility under conditions of fluctuating torque, the former are intended for applications where slight variations in alinement are normally experienced.

Simon Group Opens New Research and Development Buildings

To mark the inauguration, by Sir Henry Tizard, F.R.S., on July 3, of the new research and development buildings of the Simon Engineering Group (which comprises, *inter alia*, Huntington & Heberlein & Co., Ltd.), at Cheadle Heath, Stockport, the group has issued an illustrated brochure describing the scale and nature of its work.

In the new buildings, many separate laboratories and experimental plants, formerly scattered over the Cheadle Heath property, have been centralized in a single block of modern buildings, with expanded and improved resources and with accommodation for an enlarged and strengthened scientific staff.

Some of the main fields of work covered by the Group are: coal cleaning, coal carbonization, treatment of coal by-products, fuel combustion, steam generation, sulphuric acid production and electrostatic precipitation.

The research department is a central organization, serving all the Simon-Carves contracting departments. Its work falls under three main headings: Mechanical and Chemical Testing, Research and Information.

In a business so largely concerned with various forms of coal preparation and utilization, exhaustive coal tests are essential in determining plant design and performance guarantees. No less than nine laboratories, with ancillary rooms, are devoted to the preparation of samples, "washability" tests, and examination of the coking qualities of coals for carbonization, and of the calorific value, ash fusion and grindability of coals for boiler firing. Facilities are also provided for testing the refractory materials used in coke ovens and boiler combustion chambers, and for metallurgical tests of the metals used in plant construction.

A large and varied programme of research lies ahead. One field is the behaviour of small particles, with special reference to sedimentation, the collection, extraction and disposal of industrial mists and dusts, pulverization of coal, combustion of pulverized fuel and sulphur-bearing ores, and magnetic properties.

A major problem at present is the supply of sulphur for sulphuric acid production, and among the sources under consideration are recovery from waste gases and flue gases, removal as hydrogen sulphide from town's gas, and the flash roasting of iron pyrites. Interest is also being maintained in the micro-biological process.

The work of the development departments falls into two general categories. The first involves new principles and the study of new processes from the laboratory through pilot plant stages of increasing size. The second category involves no new principle, but calls for a study of the operating characteristics of existing full-scale plants, the results being applied to the design of future installations or the modification of those already in use.

In the Chemical Plant Department long-term work is undertaken on the development of process equipment for sulphuric acid production by the contact process, sulphuric acid recovery and concentration, sulphur recovery, electrostatic precipitation, gasworks ancillary processes, and mineral preparation. The development work on mineral preparation is conducted in London by Huntington, Heberlein & Co., Ltd., a firm recently acquired by Simon-Carves Ltd. as a wholly-owned subsidiary.

The purpose of the pneumatic and mechanical handling plant in the Development Building is to examine the possibility of pneumatically handling the many industrial bulk materials hitherto considered too difficult. In resolving these problems certain fundamental data on particle size, terminal velocity, angle of repose, etc. are obtained, and thereafter theoretical conclusions are tested by full-scale experiments.

REVIEWS

Quin's Metal Handbook, 1950 Edition.—*Published annually by the Metal Information Bureau, Ltd., Birkett House, 27, Albemarle Street, London, W.1. Pp.* 611; 6¼ x 4½ *in.* £1 (*post free*).

The thirty-seventh annual edition of Quin's Metal Handbook, the well-known international reference book on metals, is replete with statistical and other information. To facilitate easy reference, a different lay-out has been adopted for the greater part of the statistical matter which should prove to be of convenience to readers. Furthermore, the experiment made in the two previous issues, of separating the non-ferrous and iron and steel sections into separate books, has been discontinued because, the publishers state, experience has shown that there are advantages in having complete reference to both non-ferrous and iron and steel statistics in the same volume. However, both these sections are kept quite separate in the present volume.

The 1950 edition contains again many details relating to prices, production, consumption, exports, imports, brands and stocks of a wide range of ferrous and non-ferrous metals for most of the industrialized countries of the world.

The memoranda sections include, *inter alia*, brief accounts of the physical properties and uses of the commercial minor metals, notes on the physical, chemical and other characteristics of commercial grades of ore of the principal non-ferrous metals, diaries covering the main base metals, British and American standard classifications of non-ferrous scrap, and a summary of the British Iron and Steel Nationalisation Bill and of its progress through both Houses of Parliament. Also included is a useful dictionary, in the English, French, German and Spanish languages, of technical terms relating to the iron and steel industry.

An E.C.A. Progress Report

The thirtieth report prepared by the Division of Statistics and Reports of the E.C.A. for presentation to the E.C.A. Public Advisory Board, summarizes the major activities of the E.C.A. under the European Recovery Programme and the Far East and Korean Programme. The section devoted to European industrial projects by type states, *inter alia*, that projects have been approved to reactivate a high-grade iron-ore mine at Sydvaranger, Norway, and to instal modern mechanical equipment in iron-ore mines in France, Austria and Turkey. As regards coal mining, the report states that projects are under way to develop the Sardinian coal mines, the Zonguldak coalfields and the Western lignite mines in Turkey, and the Aliveri mines in Greece. E.C.A. dollar assistance has been furnished for the improvement of the underground workings and the treatment plant of the potash mines in Alsace. The modernization, expansion and re-equipment of 30 steel plants in six different countries has also been approved. Twenty-nine power projects have been approved, representing 24 per cent of E.C.A. cost for all projects authorized. Countries receiving E.C.A. aid in the power sector are France, Italy, Greece, Turkey, Iceland, Denmark and the Netherlands.

The Nickel Bulletin, Vol. 24. No. 3

The wide range of interests covered by the abstracts contained in this publication is well illustrated in the current issue; subjects range from methods of the determination of traces of nickel in catalysts to more practical papers as, for example, that dealing with the welding of austenitic steel for high-temperature service. Copies may be obtained on application to: The Mond Nickel Co., Ltd., Sunderland House, Curzon Street, London, W.1.

Metals, Minerals and Alloys

With the President's power to control U.S. prices, wages, rents and credits on the eve of expiring last Saturday night, quick action was taken by the U.S. Administration to meet this contingency. President Truman signed a Bill extending his powers for 31 days, and accepting the Senate's amendment barring any price reductions or additional price ceilings, so that prices are frozen till the end of the month. However, the O.P.S. in a last minute order reduced aluminium scrap price ceilings 30-50 per cent below the prevailing market price, and cut those for lead scrap to levels normally related to those for primary metal.

The House of Representatives has passed and sent to the Senate a Bill suspending import duties and taxes on all scrap for another year. At the beginning of the third quarter of the year the Control of Materials Plan, instituted during the Second World War has been reimposed. This is designed to schedule "essential" production by quarterly periods. It is thought that the plan will be extended to similar goods by the beginning of the third quarter. The plan is designed more particularly to allocate steel, copper and aluminium.

Copper.—Generally speaking the U.S. copper market is reported firm, with plans to effect complete allocation of the red metal as well as of lead and zinc next month. Further cuts have been ordered in the civilian use of copper in the third quarter, and speaking generally, non-ferrous metal supply looks like being tight right through next year, and possibly well into 1953.

The Economic Stabiliser, Mr. Eric Johnston, told the Senate Finance Committee that the U.S. would be 100,000/150,000 s.tons short of requirements this year and said that either the domestic price of 24 c. would have to be advanced to the world price of 27½c. or a 3c. subsidy given to consumers. As regards long-term prospects, Mr. James Boyd, Defence Minerals Administrator, has forecast that over the next five years U.S. production of copper should be increased by 139,000 s.tons of copper, 90,000 s.tons of zinc, 35,000 s.tons of lead, 36,000 s.tons of magnesium 550,000 s.tons of aluminium, 4,000 s.tons of magnesium and 600 s.tons of cadmium largely as the result of accelerated amortization allowances for taxing purposes.

The terms of new labour contracts after June 30 are giving rise to some difficulty in the copper mines and smelters of Utah and Nevada, and the Unions took a strike vote at the end of last week, but the move appeared to be more a reminder to the producing companies not to delay a settlement rather than a determination to start a serious strike. However, the A.S.R.'s Garfield smelter is shut down.

The Union Minière output last year was a record at 175,920 tonnes compared with 141,399 tonnes in 1949. The Japanese output of electro in May totalled 6,675 tonnes as the result of a strike, but the June output should be about 1,000 tonnes more. All sections of the Chilean copper industry are said now to have resumed normal working after the military authorities had intervened. It is hoped in Lisbon that the copper mines in Angola will be able gradually to increase their output so as to become the main source of supply for the Portuguese industry.

Lead.—Lead supplies in the United States continue to grow tighter and consumers have been able to cover only 20 per cent of July requirements from domestic sources. Mexican lead for export is quoted 21.50/22c. to European buyers. Supplies of lead to France are plentiful enough to permit exports, a situation which exists there for no other metal except aluminium.

Tin.—Though the R.F.C. has not further cut selling price for tin which remains at 106c. per lb., the General Services Administration has informed Indonesia and the Belgian Congo that it will exercise the option contained in the terms of its contract with them to terminate this when the price is above $1.03 per lb., and in accordance with this decision will call for only 100 tons of metal at $1.03 during the last half of the current year. This, it is thought, would leave the producers with three possible courses: to accept this token delivery; to offer a larger tonnage at possibly lower price; or to refrain from any sale, which would probably lead to an end of the contract. This action by the G.S.A. may explain why the R.F.C. has not reduced its prices below 106c. Should, however, the average Singapore and New York price fall below the critical figure of 103c. during the first seven trading days of July, the break clause cannot be enforced. The R.F.C. has continued to book large sales of tin at 106c. but has made no corresponding move in regard to its contracts for the purchase of tin concentrates from these two countries or presumably from Bolivia; as they are necessary for the operation of the Texas Smelter. Should the two countries in question decide to sell at the 103c. price this might help to stabilize the tin market at around that figure. Should they decide not to sell, and dispose of their production elsewhere, this could easily mean further price reaction in the world market.

The stalemate into which the Malayan tin industry is drifting is indicated by our Kuala Lumpur correspondent's despatch in another column. At the meeting of the Billiton Tin Company at the Hague, it was explained that the Indonesian output from Banka, Billton and Singkep was below expectations, due primarily to the lack of skilled personnel, the seven-hour working day, and the low labour productivity.

Production from deposits in Brittany will, it is hoped, alleviate any shortage in France before long, as it is thought that the mines there are capable of producing about 12 per cent of French consumption. Cassiterite certainly exists there but whether the deposits are economic is another matter.

An electrolytic tinning and cold-rolling plant has been opened at Liège. The electrolytic tinning method is that developed by the Carnegie Illinois Company.

Zinc.—The position in the United States seems to be verging on temporary stalemate. Developments in Korea have increased the buyers' reluctance to pay premium prices in the domestic as well as in the international market, but in view of the great scarcity of supply, producers are disinclined to make any concessions. The price for Mexican zinc approximates 30/31c. f.a.s. Gulf Ports. The N.P.A. plan to complete its scheme of allocation of zinc after the beginning of next month. Japanese output in May was 4,782 tonnes of which 3,197 was electrolytic zinc. Supplies are short in France, which imports about one-third of her requirements, and a deficit in supply of some 15,000 tons is anticipated this year. Mexican production for the first four months of this year is reported as 60,526 tonnes, which is below the average monthly output last year.

Bismuth.—It is reported from Frankfurt that authorization has been issued to import $100,000 worth of bismuth from Great Britain.

Titanium.—The United States Navy Department reports that a process has been worked out which should result in lowering the cost of titanium metal from the current level of approximately $5 per lb. to $1 per lb.

Tungsten.—Although the wolfram market in a sense may be called weaker, actually this is not really the case as there is still the same demand, but what has happened is that the imminence of the Raw Materials Allocation, due to

come into operation on July 1, has meant that a number of sellers who had material to offer were anxious to unload before the operations of the organization came into being. Last week large quantities floated about and offers were being sought, buyers being prepared to sell at 570s. where they were previously asking 580s. This week with the Organization coming into being everybody is uncertain regarding any purchases they may make. Therefore, there is a general reluctance to buy and some sellers are endeavouring to unload such stocks as they have and are prepared to take a lower price if they can find a buyer. Under these circumstances the market is quite nominal and no real price can be quoted. In Portugal there are large stocks available still waiting for export licences.

The U.S. Department of Commerce has announced that the export quota licences during the third quarter of the year has been fixed at 6,000 lb., the same as for the previous quarter.

Gold.—The West Australian output showed a very big increase in May at 78,612 f.oz. compared with 47,150 f.oz. in April. The director of the Bank of Mexico, Señor Novoa, has stated that the bank is still buying gold, but is not minting gold for local currency purposes.

Silver.—The Government of Mexico will not export any more silver this year, according to the Director of the State Bank, since the entire domestic production is needed in the country. The Government was, he said, buying up all domestic output at prices between the New York figure for foreign silver of 87⅜c., and the U.S. Treasury price of 90½c. Not only is Mexico now minting its own silver coins, but it is coining some 50,000,000 ryals for Saudi Arabia, estimated to call for 18,750,000 oz. Mexico was also preparing to mint coin for Pakistan and Western Germany. Señor Novoa said that they expected that this year's output of silver in Mexico to reach between 35,000,000 and 40,000,000 f.oz. The result of this announcement has been that silver has appreciated to its former ceiling of 90.41c. per f.oz. and the London price has similarly responded to 78½d. per f.oz.

Platinum.—At an extraordinary general meeting of the Waterval (Rustenburg) Platinum Mining Co. in Johannesburg last week, called primarily to discuss alterations in capital structure, the chairman, Mr. Ewing, said present and anticipated demand for platinum warranted another doubling of the scale of operations at the Rustenburg and Union properties. This, of course was additional to the earlier doubling of the plant which came into full operation last August. In addition to expansion of plant in South Africa and provision for more workers, enlargement of the present capacity of the plant operated by Johnson Matthey at Brimsdown would be necessary to deal with the additional quantities of matte which will be produced. The cost of doubling the output and providing for the additional matte treatment plant is put at approximately £2,400,000. The Government returns gave the platinum output last year as 144,217 oz.; as and when this is doubled, the figure should be in the neighbourhood of 290,000 oz. The Canadian output last year of the platinum metals was 269,442 oz.

The London Metal Market

(From Our Metal Exchange Correspondent)

In spite of the official notification at the weekend that the G.S.A. intends to purchase only a token quantity of metal against their tin contracts with Indonesia and the Belgian Congo, provided that the average price during the first week of July will be above 103c., the London market has not fallen to the extent that a number of people expected, and it is very difficult to see why this is so as it must be admitted that every factor points to a lower level of price. The two main reasons for the relatively small decline are the continued demand in Singapore, and the apparent scarcity of cash tin on the market, although this has not resulted in any appreciable widening of the backwardation. In the States consumers appear to be holding off once more after the R.F.C.'s sales of over 2,000 tons tin in the week ending June 22nd.

In copper, lead and zinc the political developments have tended to make buyers hold off, but most sellers are not reducing their prices to any extent as it is generally recognized that whatever happens in the immediate future, rearmament will go on and no cure has yet been found for the inflationary spiral.

On Thursday the official close on the tin market was:—Settlement price £890, Cash Buyers £890, Sellers £900; Three months' Buyers £835, Sellers £837 10s. In the afternoon the market was slightly easy. Turnover for the day was 155 tons. Approximate turnover for the week was 1,095 tons.

The Eastern price on Thursday morning was equivalent to £861 2s. 6d. per ton, c.i.f. Europe.

Iron and Steel

Steel is to go on the ration. An allocation scheme is in course of preparation and as it cannot be prepared in full detail until towards the end of the year, interim measures are to be introduced immediately to safeguard the defence programme and various categories of civil production, including exports which are deemed to be entitled to preferential treatment. A Defence Order symbol will be applied to orders for specialized defence work, and a "P.T." symbol will ensure supplies for selected civilian orders, but no estimate is yet forthcoming of the tonnages which will be required for these special purposes. All that Mr. Gaitskell could say in announcing the scheme was that the proportion of total steel supplies covered by the D.O. symbol would not be large except in the case of alloy steels. It is obvious, however, that some reduction in the tonnages issued to non-priority users, and the extent of these cuts is a present source of anxiety.

Apparently the Government is resigned to the prospect of a reduced output of steel this year, although the Minister of Supply has again insisted that no reliable forecast of total production for 1951 can be given. Availability of supplies of coal, ore and scrap is still the governing factor, and in this respect the omens are not propitious. There have been ominous warnings this week of another coal crisis this winter, and deliveries of foreign ore and scrap are also substantially below requirements. At this period of the year works stocks of these materials are usually being built up for the winter, but under existing circumstances this is impossible, and efforts are now directed to the expansion of home ore production which it is hoped may exceed last year's output by at least 1,500,000 tons.

The extent of the overseas demand for British steel is profoundly impressive. Actually, exports in the first five months of this year were slightly in excess of the tonnage shipped in the corresponding period of last year. Not all the licensed tonnages could be shipped before the end of June and the authorities have conceded the point that licences granted for Period II will remain valid until July 31.

Coal

The Ministry of Fuel and Power reports the output of coal for the week ended June 30 as 4,215,900 tons, as compared with 4,244,400 tons in the previous week. Distributed stocks for the week ended June 23 were 12,115,000 (11,707,000). The number of men on colliery books for the week ended June 23 was 701,700 (701,900).

JULY 5 PRICES

COPPER

Electrolytic	£234 0 0 d/d
Fire refined, high conductivity	£234 0 0 d/d
Fire refined, high grade	£233 10 0 d/d
Fire refined, ordinary quality + 99.7%	£233 0 0 d/d
Fire refined, ordinary quality + 99.2%	£232 10 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£160 0 0 d/d
Soft empire, including secondary lead	£160 0 0 d/d
English lead	£161 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid	£160 0 0 d/d
G.O.B. spelter, domestic	£160 0 0 d/d
Prime Western	£160 0 0 d/d
Electrolytic and refined zinc	£164 0 0 d/d
Zinc (99.99% Zn)	£166 0 0 d/d
Sheets	£176 0 0 ex works
Zinc oxide (red seal)	£178 0 0 d/d
Zinc oxide (green seal)	£179 10 0 d/d
Zinc oxide (white seal)	£180 10 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£390 per ton
Crude, (70%)	£305 per ton

NICKEL

99.5% (home trade)	£454 per ton

OTHER METALS

Aluminium, £124 per ton.	Palladium (scrap), £8 oz.
Bismuth, 25s. 9d. lb.	Platinum, £27/£33 5s. nom.
Cadmium, 18s. 3d. lb.	Rhodium, £45 oz.
Chromium, 5s. 11d. lb.	Ruthenium, £30 oz.
Cobalt, 17s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.oz.	Selenium, 25s. nom. per lb.
Iridium, £65 oz. nom.	Silver (bar), 78¼d. f.oz. spot and forward.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Tellurium, 19s. lb.
Osmiridium, £35 oz. nom.	
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	65% 17s. lb. c.i.f. 60% 16s.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£11 per ton c.i.f.
„ „ (concentrates)	£11 per ton c.i.f.
„ „ Refractory	£10 12s. per ton c.i.f.
Baluchistan Metallurgical	£11 11s. per ton c.i.f.
Magnesite, ground calcined	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Manganese, Best Indian	(Nominal)
Molybdenite (85% basis)	(Nominal)
Wolfram (65%), U.K.	(Nominal)
Tungsten Metal Powder (for steel manufacture)	37s. 9d. nom. per lb. (home)
Ferro-tungsten	35s. 9d. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9 d/d per ton
Ferro-manganese, home	£37 19s. 10d. per ton
Ferro-manganese, export	Nom.
Brass Wire	2s. 6½d.
Brass Tubes, solid drawn	2s. 0½d.

Mining Men and Matters

Mr. Lewis Chapman has been appointed chairman of The Birtley Co., Ltd., Birtley, Co. Durham, consequent on the death of **Mr. E. H. W. Cooke.** Mr. Chapman is also managing director of William Jessop & Sons, Ltd.

Mr. R. D. Hempson has been elected a director of Anglo-Thai Corporation.

Dr. Zay Jeffries has been appointed Director General of the World Metallurgical Congress to be held in Detroit, Michigan, from October 14-19.

The South African Institution of Engineers has changed its name to **The South African Institution of Mechanical Engineers,** as from June 1.

Incorporated Plant Engineers have arranged for members of its branches to visit, on July 11, Small & Parkes, Hendham Vale, Manchester.

Mining Engineers Visit G.E.C. and Nife Works.—Nearly 200 members of the Association of Mining, Electrical & Mechanical Engineers visited the works of Nife Batteries on Tuesday, June 26. On the following day, 80 members of the Association spent the day going round the Witton Engineering Works of the General Electric Co.

The Iron & Steel Corporation of Great Britain announces the following changes in the Boards of three publicly-owned companies: Mr. F. Scopes has been appointed director and chairman of the Kettering Iron & Coal Co., Ltd., Kettering, in succession to Mr. James Gough, who has recently resigned; Mr. Scopes has also been appointed chairman and Mr. G. H. Johnson, managing director of the New Crnsley Iron & Steel Co., Ltd., Kettering. Mr. H. J. Ellison, chairman and managing director, has retired. Mr. W. S. G. Rees has been appointed chairman, and Messrs. O. J. Thomas, Ivor Lewis and E. Arthur Withington directors, of the Glynhir Tin Plate Co., Ltd., Pontardulais, Glamorgan. Messrs. Edward Withington and N. W. Fischer have retired from the Board.

Business Items

Mr. Charles Hope Lumley has been appointed a director of Home Sales (Industrial) of Sigmund Pumps.

The Earl of Scarborough has been elected a member of the Board of the Standard Bank of South Africa.

Mr. A. H. Johnson, O.B.E., has been appointed to the Board of London Aluminium and elected chairman. **Messrs Duncan Campbell** and **J. D. Campbell** have resigned from the Board.

Mr. P. D. F. Varrall has been appointed secretary of Johnson Matthey & Co. **Mr. L. C. Montague,** secretary from 1934 to date, will now give the whole of his time to the work of joint managing director of the company, which position he has held in conjunction with the secretaryship since 1946.

Palestine Potash announces the following new address: 62, Pall Mall, London, S.W.1. Telephone: Trafalgar 2241-3.

The Commercial Bank of Australia has opened a branch at Civic Centre, 405, Hunter Street, Newcastle, New South Wales.

The Bank of Australasia has opened a new branch at 161, Flinders Lane, Melbourne.

The National Bank of India has opened a branch at Bangalore, India.

OAKLAND METAL COMPANY LIMITED
LONDON OFFICE: 94, New Bond Street, London, W.1
Telephone: GROsvenor 5241/4. Cables: AMOMET LONDON.
Telegrams: AMOMET WESDO LONDON.

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The Mining Markets

(By Our Stock Exchange Correspondent)

The Stock Exchange has had a quiet week. The crystalizing of Russian peace overtures into definite arrangements for a discussion of a cease fire in Korea encouraged a mood of cautious optimism. But during all times of uncertainty business tends to dry up while investors sit back and await events.

One tangible result, however, was a revival in gilt-edged. There was little enquiry from small investors, but the market received some institutional support and responded accordingly.

Kaffirs continued last week's recovery and many of the leading producers recorded useful gains.

The June returns for the Rand mines record substantial reductions in working profits for almost all mines.

Retrospective wage increases granted to certain classes of employees for the period January 1st to June 30th are included in this month's figures. Daggafontein results were also adversely affected by an underground fire at the beginning of the month. Good news was announced by Stilfontein. Development at this mine up to June 26th had given 97.4 per cent payability with average values of 45.8 dwt. over 6.9 in. or 316 in. dwt. Following this result, some attention was paid to the neighbouring property of Vaal Reefs. In some quarters optimism over possible reduction in working costs, caused by falls in commodity prices, is considered to be unjustified. These circles point out that if the Korean war ends, the demand for gold for hoarding purposes may well slacken. But unless armament plans are radically altered, the continued inflation of world currencies appears inevitable, and there are always rumours of further devaluation current to offset the views of the above school of thought. In this connection, it is interesting to note that Swiss interests have formed a gold trust in Tangier. This concern will bank gold in its vaults and issue certificates of ownership in terms of gold bars. These certificates will be freely transferable in Switzerland, thus allowing the public in that country to deal freely in gold. The starting of this enterprise argues faith in the stable quantities of gold vis-a-vis present day currencies.

Coppers were among the commodity shares which had a substantial setback following the Korean news. Towards the end of the current week a recovery set in. Moderate buying of the leading producers occurred and checked the fall.

Whatever the trend of the Korean war and the rearmament programmes, huge demand for the metal seems assured for some years ahead. The consolidated profit of the British South Africa Co., to September 30th, 1950, was nearly £400,000 up on the previous year. Depreciation is up at £82,024 against £22,530, and taxation takes no less than £2,082,156 against £1,827,119. Sometime ago it was announced that the dividend was being maintained at 33⅓ per cent.

Australian gold shares were a neglected market. A better tendency enhanced by the easing of commodity prices was, however, noticeable. There is also a growing feeling that revaluation in Australia is now perhaps less likely than for sometime past.

Oils recovered from their recent setback.

Quarters close to Anglo Iranian are still optimistic that some settlement will eventually be reached with the Persian Government.

Ultramar rose sharply following the announcement that a substantial reduction has been made in the loan received from the Finance Corporation for Industry. Further repayments are foreshadowed and it is hoped to liquidate the debt by the final date, September 30th, 1952.

	Price July 4	+ or − on week
FINANCE		
African & European	3⅛	+ ⅛
Anglo American Corpn.	7⅜	+ ⅛
Anglo-French	23/9	.....
Anglo Transvaal Consol	41/3	−7½d
Camp Bird	12/6	+3d
Central Mining (£1 shrs.)	43/9	+1/3
Consolidated Goldfields	2⅛	+ ⅛
Consol. Mines Selection	36/3	+7½d
East Rand Consols	4/3	.....
General Mining	5½	+ ⅛
H.E. Prop	38/9XD	.....
Henderson's Transvaal	10/6	.....
Johnnies	3½	+⅛
Rand Mines	7⅞	+ ⅛
Rand Selection	41/10½	+1/10½
Union Corporation	9⅛	−⅛
Vereeniging Estates	5⅛	+ ⅛
Writs	33/-	+6d
West Wits.	2⅛	− ⅛
RAND GOLD		
Blyvoors	48/9	+7½d
Brakpan	20/-	+3d
City Deep	3XD	.....
Consol. Main Reef	2⅜	.....
Crown	4⅛	− ⅛
Daggas	3⅛	+ ⅛
Dominion Reefs	1/9	.....
Doornfontein	30/-	+7½d
Durban Deep	3⅛	+ ⅛
E. Daggas	26/10½	+7½d
E. Geduld ... (4/- units)	2⅛	+ ⅛
E. Rand Props	3⅛	+ ⅛
Geduld	7⅛	+ ⅛
Grootvlei	38/9	+1/10½
Libanon	16/3	+3d
Luipaards Vlei	21/9	+9d
Marievale	21/3	+6d
Modderfontein B	5/6	.....
Modderfontein East	2⅛	+ ⅛
New Kleinfontein	33/1½	.....
New Pioneer	24/4½	−1/6
Randfontein	19/3	+6d
Robinson Deep	13/9	.....
Rose Deep	36/3XD	.....
Simmer & Jack	6/6	+6d
Springs	10/4½	+3d
Sub Nigel	3⅛	+⅛
Van Dyk	15/3	.....
Venterspost	31/3	+1/3
Vlakfontein	18/6	+1/-
Vogelstruisbult	26/6	+9d
West Driefontein	6⅛	.....
W. Rand Consolidated	41/3XD	+1/3
Western Reefs	39/4½	.....
O.F.S.		
Alpha F.S.A.	13/6	−1/9
Blinkpoort	25/-	+1/3
Central Mining F.S.	5/1½	−1½d
Freddies	12/9	+1/-
Freddies N.	11/9	+9d
Freddies S.	13/6	+6d
F.S. Geduld	3⅛	+ ⅛
Geoffries	29/6	+1/6
Harmony	25/-	.....
Lydenburg Estates	11/3	+7½d
Middle Wits	25/-	+9d
Ofsits	2⅛	+ ⅛
President Brand	22/-XR	+6d
President Steyn	18/3	.....
St. Helena	31/10½	−7½d
U.F.S.C. & G.	9/-	−9d
Virginia Deb.	73	−2
Virginia Ord.	14/9	.....
Welkom	41/3	−1/3
Western Holdings	3⅛	+ ⅛
WEST AFRICAN GOLD		
Amalgamated Banket	2/6	.....
Ariston	7/4½	−1½d
Ashanti	28/-	−3d
Bibiani	10/4½	−4½d
Bremang	3/6	−1½d
G.C. Main Reef	3/7½XD	.....
G.C. Selection Trust	9/9	−3d
Konongo	1/9	+1½d
Kwahu	4/-	−3d
London & African Mng.	2/1½	−1½d
Lyndhurst Deep	1/1½	.....
Marlu	2/4½	−1½d
Nanwa	10½d	.....
Taquah & Abosso	7/1½	.....
AUSTRALIAN GOLD		
Boulder Perseverance	3/1½	+4½d
Gold Mines of Kalgoorlie	16/6	.....
Great Boulder Prop	6/9	.....
Great Western Consol.	2/9	.....
Lake View and Star	20/9	+1½d
Mount Morgan	20/3	+3d
North Kalgurli	18/3	.....
Paringa	9d	.....
Sons of Gwalia	12/6	+6d
South Kalgurli	9/7½XD	−7½d
Western Mining	7/9	+4½d
Wiluna	11/4½	+1½d
MISCELLANEOUS GOLD		
Cam and Motor	31/10½	−7½d
Champion Reef	8/9	.....
Falcon Mines	11/4½	−1½d
Globe & Phoenix	23/-	.....
MISCELLANEOUS GOLD (contd)		
G.F. Rhodesian	8/9	+3d
London & Rhodesian	6/4½	+1½d
Motapa	2/6	.....
Mysore	6/3	−1½d
New Guinea	1/9	+1½d
Nundydroog	7/9	.....
Ooregum	3/3	−3d
Oroville	12/-	.....
St. John d'El Rey	36/3	+1/3
Zanis	34/-	−3d
DIAMONDS		
Anglo American Inv.	3⅛XD	−⅛
Casts	36/-	−1/3
Cons. Diam. of S.W.A.	3½	−⅛
De Beers Defd. Bearer	56/6	−3/-
De Beers Pfd. Bearer	16½	.....
COPPER		
Chartered	67/-	−1/6
Indian Copper	4/9	.....
Messina	4⅛	.....
Nchanga	6⅛	−⅛
Rhod. Anglo-American	57/-	−6d
Rhodesian Selection	36/4½	−4½d
Rhokana	20⅛	+⅛
Rio Tinto	19½	−⅛
Roan Antelope	18/10½	−9d
Selection Trust	50/-	+7½d
Tanks	46/6	+6d
Tharsis Sulphur Br.	48/9	.....
TIN (Eastern)		
Anglo-Burma	3/3	.....
Ayer Hitam	28/1½	−4½d
Bangrin	32/6XD	−2/6
Gopeng	13/-	+3d
Hongkong	11/3	−3d
Ipoh	28/1½	−7½d
Kamunting	12/3	−3d
Kepong Dredging	11/3	.....
Kinta Tin Mines	15/-	.....
Kramat Pulai	4/4½	.....
Malayan Dredging	23/9XD	−3d
Pahang	14/6	−3d
Pengkalen	10/6	.....
Petaling	12/1½	+1½d
Rambutan	16/3	+9d
Siamese Tin	22/-XD	−2/-
Southern Kinta	12/3XD	−6d
S. Malayan	28/-XD	−1/9
S. Tronoh	22/3	+3d
Sungei Kinta	17/9XD	−1/-
Tekka Taiping	9/6	.....
Tronoh	28/-	−6d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	10/3	−6d
Beralt Tin	24/9	−3d
Bisichi	4/4½	−4½d
British Tin Inv.	16/3	.....
Ex-Lands Nigeria	7/6	−3d
Geevor Tin	16/3	−6d
Gold & Base Metal	4/-	−3d
Jantar Nigeria	6/7½	−4½d
Jos Tin Area	11/3	−3d
Kaduna Prospectors	4/-	.....
Kaduna Syndicate	6/3	.....
London Tin	4/9	−3d
Ribon Valley	1/1½	.....
United Tin	2/7½	−3d
SILVER, LEAD, ZINC		
Broken Hill South	52/6	−1/3
Burma Corporation	3/10½	.....
Consol. Zinc	33/6	−3d
Lake George	24/-	−3d
Mining Trust	5/6	−4½d
Mount Isa	43/3	+9d
New Broken Hill	29/9	−9d
North Broken Hill	72/-	−1/3
Rhodesian Broken Hill	18/9	−3d
San Francisco Mines	30/7½	+1½d
Trepca	3/10½	−1½d
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	63/1½	.....
Associated Manganese	61/6	.....
Chinese Engineering	2/3	.....
C.P. Manganese	52/6	+1/10½
Natal Navigation	5⅛	−⅛
Wankie Colliery	23/3	−3d
Witbank Colliery	4⅛	.....
CANADIAN MINES		
Dome	$27½	−⅛
Hudson Bay Mining	$109	−1
International Nickel	$71⅞	−⅛
Mining Corpn. of Canada	£6	.....
Noranda	$138	−2
Quemont	£8½	.....
OIL		
Anglo-Iranian	5⅛XD	+⅛
Apex	50/-	+1/3
Attock	30/-	+1/3
Burmah	63/9	+1/3
Canadian Eagle Bearer	35/-	−1/-
Mexican Eagle	23/4½	.....
Shell	4⅛	+⅛
Trinidad Leasehold	28/9	−3d
T.P.D.	41/4½	+7½d
Ultramar	34/3	+1/3

Company News & Views

Kaffirs and Rising Costs

Although it is true that the disappointing Kaffir June dividend declarations were a potent factor in depressing the gold share markets, the real weakness springs from the fact that rising costs have now eaten into a large part of the benefits derived from devaluation. Yet there are good grounds for believing that investors have attached too much importance to these factors.

Several of the companies are still paying more than they did in December, 1949, when the higher gold price had been operative for only three months, and substantially more than in June, 1949; thus, it will be seen that the industry is a long way from returning to its pre-devaluation position. Furthermore, investors should remember that when the price of gold was raised it enabled mines to lower their milling grade and to prolong their lives. If the rise in costs cannot be halted or slowed down substantially, there is always the possibility that a good many of the companies will be able to raise their pay limits—albeit at the expense of the life of the industry and of the low-grade marginal producers. Another factor which might mitigate difficulties caused by increasing costs would be the introduction of a more favourable gold mines taxation formula in the next South African Budget. Nor should the premium gold sales which accounts at present for about 40 per cent of the Union's production, be overlooked; when the final dividends are paid in December next, the inclusion of revenue from premium sales in the profit figures might well produce a different and more favourable results than those we have just witnessed.

In the longer run, it is the relationship between the cost per unit of production and the official price per unit of gold, and with the latter fixed and the former rising, average revenue is diminishing. But rising costs are also symptomatic of rising world prices and if these should continue on their upward course then a case for a revision of the official price for gold would be a very strong one indeed.

Kinta Tin Celebrates Its Jubilee

The chairman of the Kinta Tin Mines, Mr. R. C. Savory, in his statement accompanying the report and accounts for the calendar year 1950 said that he had great pleasure in reviewing the company's operations. And well he might, for without exception the working results and statistics covering 1950 are an improvement over those for the previous year. The volume of ground treated was greater and tin ore recovered was higher by 95 tons at 402 tons. Particularly cheering were the statistics covering working costs which fell to 9.82d. per cu. yd. against 11.86d. previously. Production costs were also lower at £122 17s. 10d. per ton (£125 16s. 3d.), while the price received for tin ore (less tribute), advanced by £124 11s. 2d. to £468 18s. 7d. The outcome of these favourable operations was that net profit for the year jumped to £163,535 compared with £71,534 in 1949. The tax man took a considerably larger slice—£98,511 against £37,000. General reserve was bolstered by the addition of £30,000 against £20,000 and investment reserve received £2,000 against nil previously. The company celebrated its jubilee in a fitting fashion and shareholders received 65 per cent (40 per cent), which absorbed £42,525, leaving the carry forward slightly higher at £11,893, compared with £11,394 at the end of the preceding year.

Mr. Savory commented very briefly on the dividend record of the company during the first half century of its existence, and pointed out, no doubt somewhat nostalgically, that when the company paid its first dividend of 5 per cent in 1902, income tax was only 1s. 3d. in the £. Coming to a more serious topic, the chairman said that unless the price of tin was maintained at a reasonable figure, it was certain that very large areas of low grade tin bearing ground would never be worked at all and, he added, it was in such low grade ground that the reserves of Malaya are now largely contained.

Results for the first five months of the current year have been satisfactory both to the company and to the shareholders; production totalled 166.7 tons of tin ore and two interim dividends aggregating 35 per cent have been paid.

Tanjong Tin Goes From Strength To Strength

Shareholders who accept Mr. Savory's invitation to remain for the general meeting of Tanjong Tin in which Kinta Tin owns a large interest, will find that this company's results for the year 1950 were also highly satisfactory. A greater volume of ground was treated, with a higher yield per cubic yard which enabled the tonnage of tin ore recovered to move up from 241 tons to 453 tons. The greater yardage treated resulted in working costs per cubic yard falling from 13.82d. to 10.25d. Production costs per ton showed a very welcome drop, falling from over £275 per ton to a little over £166 per ton. As in the case of Kinta Tin, the price received for tin ore at £484 13s. per ton was in sharp contrast to the £343 9s. 10d. per ton received in 1949.

Net profit after meeting all expenses, including £68,000 for taxation, amounted to £68,503 against only £9,595 previously. Out of the £77,602 available, two dividends totalling 25 per cent (nil), absorbed £25,320. General reserve was strengthened by the receipt of £45,000 (£10,000) and investment reserve by the addition of £1,000 (nil), leaving the carry forward higher at £6,282 compared with £4,735 in 1949.

Results for the first five months of the current year are, in the words of the chairman, "very satisfactory," total tonnage recovered being 444 tons and the company has paid two interim dividends each of 25 per cent.

Halkyn United Pays Maiden Dividend

Halkyn District United Mines, whose property extends over approximately 8,000 acres of lead and limestone deposits in the Halkyn mining district, Flintshire, have now issued their 23rd report covering their operations for the year ended December 31, 1950.

During the year, exploratory driving, raising and sublevelling confirmed the expectation of an increased production during 1951, and the programme followed has this as its main object. Extraction of ore from old lead lodes provided useful tonnage, and total ore reserves on all lodes as at the end of 1950 was estimated to be equivalent to 7,300 tons of concentrates. To avoid the handicap experienced the preceding winter from the load shedding schedule of the Electricity Authority, the company has installed its own Diesel electric auxiliary set, and since it was put into operation at the end of October last the power for the mill has been supplied by this set alone, and given entire satisfaction. The addition of a half-sized Holman table in the mill has enabled a recovery of zinc concentrates to start, and the first parcel of these concentrates was sold early in December.

The company's limestone operations went well during the year and the combined tonnage of agricultural and industrial ground limestone showed a moderate increase over the record of 1949.

The working profit on the year's operations of £70,673 enabled the company to extinguish the debit balance brought forward from 1949 of £30,755, and after providing for this and adding in the sum of £14,196 arising from tax provision no longer required, an amount of £54,115 was available. Taxation required £38,000 and the dividend of 10 per cent less tax absorbed £10,798, leaving the carry forward at £5,317.

Company Shorts

Financing Uranium Plants in Far Western Rand.—Increased borrowing powers are being sought by Blyvooruitzicht Gold Mining, West Driefontein Gold Mining, Western Reefs Exploration & Development, Daggafontein Mines, West Rand Consolidated & Stilfontein Gold Mining, to finance the erection of uranium production plants.

Company	Group	Date of Extra-ordinary Meeting	Borrowing Powers		Est. Cost Uranium Plant
			Existing	Proposed	
Blyvoors. ...	Central Mining	July 20	£1,500,000	£4,000,000	£2,500,000
West Dries.	Gold Fields	July 20	1,780,270	3,820,500	2,000,000
W. Reefs ...	Anglo American	July 17	3,500,000	5,000,000	3,615,000
Dagga.	Anglo American	July 17	1,750,000	4,000,000	2,920,000
W.R. Consol.	Gen. Mining	August 17	1,075,000	2,150,000	1,600,000
Stilfontein...	Strathmore	July 27*	2,500,000	7,500,000	2,500,000

*July 27 meeting of shareholders in Johannesburg. July 19 meeting of loan stockholders.

The table gives the date on which each of the companies will hold extraordinary meetings to consider resolutions empowering the directors of each company to borrow the necessary capital for this purpose, the existing and proposed borrowing powers and the estimated cost of the erection of the uranium plant. Each of the companies stress that it is impossible to estimate with any degree of accuracy the cost of the new plant, and therefore the estimated cost should be taken as being but an expert guess. The companies state that the new borrowing powers are designed to allow a margin for contingencies and any other borrowings which might be required in the ordinary course of business. As previously announced, it is estimated that on the basis of present costs and taxation, net profits accruing to the company during the proposed ten year period will be of the order of 2d. per share per annum on the existing capital of Blyvooruitzicht; 4d. a share for West Driefontein; 3d. for Western Reefs; 4½d. for Daggafontein; 9d. to 1s. in the case of West Rand Consolidated and 3½d. for Stilfontein. Arrangements for the loans would be made through the South African Atomic Energy Board and therefore shareholders will not be required to provide any additional funds for this purpose.

Harmony Directors Authorized to Increase Borrowing Powers.—At the Extraordinary General Meeting of Harmony Gold Mining held in Johannesburg on June 29, the resolution to authorize the directors of the company to increase their borrowing powers from £1,000,000 to £2,000,000 was unanimously passed.

Mr. P. H. Anderson who presided at the meeting took the opportunity to give the latest information regarding progress at the mine's property.

By June 28 the ventilation shaft had reached a depth of 1,829 ft. The final depth of this 24 ft. concrete lined shaft is expected to be about 4,400 ft. and the Basal Reef should be intersected at about 4,000 ft. At No. 3 shaft operations also commenced in January, 1950, this shaft had been sunk by June 28 to a total depth of 1,360 ft. The final depth of the shaft, which is also of 24 ft. diameter and concrete lined is expected to be about 5,000 ft., and the Basal Reef is expected at a depth of about 4,800 ft.

Stilfontein Leases.—Too late to be included in last week's issue was the announcement from Stilfontein Gold Mining Co. that it had been agreed that of the 1,000 claims which were excised from the "Lucas Block" and included in the Stilfontein lease area, 300 claims will be re-transferred to the Lucas Block, subject to approval of the Department of Mines. In respect of these 300 claims, Stilfontein will receive a refund of their proportionate cost and the right to subscribe at par for 40,000 shares of 5s. each in the initial capital issue of the mining company to which the claims shall be transferred.

Bremang Gold Dredging.—Preliminary announcement of the results of Bremang Gold Dredging in respect of the calendar year 1950 show that profit for the year after providing £12,737 for depreciation, amounted to £119,636 against £115,565 in 1949. Taxation called for £63,725 (£70,277), and the proposed dividend of 4½d. per 5s. unit of stock absorbed £41,510, leaving the carry forward at £24,819 compared with £10,418 previously.

Gold & Base Metal Pay 15 Per Cent.—The accounts for the calendar year 1950 of Gold and Base Metal Mines of Nigeria, subject to final audit, disclose that gross revenue totalled £400,241 against £271,611 in 1949. After meeting all expenses, including taxation which called for £84,018 (£18,791), net profit showed a sharp advance over the previous year, being £71,099 compared with £20,443. From the £134,412 (£65,225) available, a dividend of 15 per cent less tax on the £350,000 capital, against 5 per cent for each of the three preceding years, absorbed £27,562 (£9,625) leaving the forward balance more than doubled at £106,850 against £51,419 previously.

Esperanza Copper & Sulphur Makes Good Progress.—A report issued by the Esperanza Copper & Sulphur Co. states that good progress has been made in opening up the Kinousa and Limni areas for the early production and shipping of sulphur and copper ore. No major delays are anticipated in reaching the production stage though late delivery of essential units of plant. In order to show the effect of the recent share issue and also to bring the company's accounts in line with its subsidiary, The Cyprus Sulphur & Copper Co., the financial year of Esperanza has been altered from December 31 to March 31. Accordingly, the financial year ended December 31, 1950 has been extended to March 31, 1951.

Rezende Mines.—Profit for the year 1950 of Rezende Mines was £2,296 against £607 previously. From the £7,305 (£13,895) available, a dividend of 1d. per 1s. share, equivalent to 8⅓ per cent (12½ per cent), absorbed £6,286, leaving the carry forward lower at £1,019 compared with £4,466 in 1949.

Butterley's Results.—Group profit after charging taxation for the calendar year 1950 of The Butterley Co., the well known ironmasters and ironfounders, amounted to £91,444 against £93,691 in 1949. The company paid a final Ordinary dividend of 5 per cent, making 8 per cent less tax for the year. The distribution in 1949 was 10 per cent less tax, plus a tax free payment of 14 per cent paid from excess compensation on main lines wagons.

The carry forward of The Butterley Co. amounted to £109,684, and that of its subsidiaries £72,917.

Ultramar Reduces Loan from F.C.I.—At the annual meeting of the Ultramar Oil Co., held at the end of last week, Sir Edwin Herbert, chairman, announced the further repayment to the Finance Corporation for Industry of £400,000 plus accrued interest, which reduces the loan from the F.C.I. to £1,100,000. The chairman also said that further substantial payments would be made during the current year and that the discharge to debt barring unforeseen circumstances should be accomplished by the due date, September 31, 1952.

Anglo Iranian Delays Annual Meeting.—Owing to the complicated position arising from the action of the Iranian Government, the directors of Anglo Iranian Oil Co. at a meeting last week decided to delay the presentation of the 1950 accounts and the holding of the annual general meeting until later in the year when it will be possible to give more complete information to the stockholders. However, the directors have declared the payment of a further interim dividend of 25 per cent, less tax, for the year 1950, payable on July 31 next, bringing the total dividend for the year to 30 per cent which is the same as for 1949.

British Controlled Oilfields.—The report and accounts of British Controlled Oilfields showed that the profit of the group for the year 1950, before taxation, fell sharply to £5,506 against £95,552 in 1949. The president, Lt.-Col. Sir Goronwy Owen, in his statement to shareholders explained that this was mainly attributable to the decline in production and the increased cost of operations in Venezuela. The company's principal asset is its investment in Trinidad Petroleum Development Co., which cost £711,230, but which in the course of the first five months of the current year its market value had recently exceeded £4,000,000.

United British Oilfields.—As a result of the United British Oilfields of Trinidad having spent over £1,250,000 on fixed assets and movable plant, the company was still left in spite of increased trading profits, with a substantial excess of current liabilities over current assets. This excess, the chairman, Sir Robert Waley Cohen said in his statement accompanying the full report for 1950, now amounted to £760,000 as compared with £740,000 at the end of 1949.

Value of oil sales for the year increased by over £2,000,000 to £8,578,000, but after providing for expenses, taxation and transferring £780,000 to general reserve, profit for the year was £210,574 (£135,244), which was carried forward.

Trinidad Central Oilfields.—Oil production at Trinidad Central Oilfields was slightly less in 1950 than in the preceding year. This was due, the chairman explains in his statement accompanying the accounts to the fact that fewer wells were drilled, and that the existing wells are showing a normal decline. Crude oil prices were not maintained throughout the year, which meant a deduction of nearly 10 per cent from the price level enjoyed in the previous year and part of 1950. Notwithstanding these features, devaluations raised trading profit for the year to £233,903 or slightly higher than in 1949 when it figured at £216,779. A dividend of 10 per cent and a bonus of 15 per cent, less tax, absorbed £37,786, general reserve was strengthened by the addition of £45,000 against £32,000 and the carry forward, after these and other appropriations had been made, amounted to £79,314 against £59,837.

CLIMAX ROCK DRILL & ENGINEERING WORKS

SATISFACTORY ORDER BOOK

The Thirty-Eighth Annual General Meeting of the Climax Rock Drill & Engineering Works, Ltd., was held at Winchester House, London, E.C.2 on June 28.

Mr. Ralph Ewing, A.M.I.Mech.E. (Chairman and Managing Director), presided.

The following is an extract from the Chairman's address which was circulated with the report and accounts:

It the first place it is with great regret that I have to refer to the death of my brother, the late Chairman and Managing Director, Mr. Alfred Ewing, who died in August last year. He had been associated with the Company since 1914 and it was largely due to his foresight and technical and commercial ability that the Company has achieved the status and reputation which it now enjoys. I have also to record with regret the death in April last of Mr. R. de H. St. Stephens who joined the Company in 1915 as Works Manager and was appointed to the Board in 1937. Mr. N. Baldwin Davies who had been in charge of our Johannesburg Branch since 1933, was recalled to this country and appointed a Director and General Manager and he will be Resident Director at our Works in Cornwall. Mr. A. Stanley Grant, Solicitor, has also been appointed to the Board.

The net profit for the year, after providing for Depreciation, Interest on borrowed money and Directors' Fees is £40,825 as compared with £37,320 in 1949, an increase of £3,505.

As in the case of last year, the turnover shows a considerable increase over that of the previous year, being about 20 per cent greater, but the profit ratio has not increased proportionately. This reflects the increased costs of production and servicing during the year without corresponding increases in the selling prices of our products.

Costs are having our most careful consideration and certain economies have been effected recently which we trust will at least off-set the continually increasing costs of materials and wages, etc.

Since the date of the Balance Sheet, however, as a result of the refinancing operation described in the Report of the Directors, Acceptance Credits amounting to £170,000 have been paid off and at the present time the Bank overdraft has been cleared and the Company's account is in credit.

You will be aware that recently the Company issued £300,000 4½ per cent Debenture Stock 1970/80 and increased its capital to £300,000 by a "Rights Issue" to Shareholders of the unissued 80,000 Ordinary Shares of 5s. each, and immediately afterwards by a Bonus Issue of one share for every two held increasing the number of issued shares to 1,200,000. It is gratifying to the Directors to be able to report that all the Debentures were taken up and that Shareholders subscribed for 98½ per cent of the 80,000 shares offered to them. The final operations have now been completed and the Issued and Loan Capital now more closely corresponds to the capital employed in the business.

You will note from the Directors' Report that the final dividend recommended is 3½ per cent. less tax, for the year ended December 31, 1950, which is payable on the whole of the Issued Capital amounting to 1,200,000 Ordinary Shares. This means that although the *rate* of final dividend is reduced, the total distribution made by the Company for the year amounts to £19,000 gross as against £18,000 gross for the previous year.

The increases in Profits Tax and Income Tax in the 1951 Budget affect the 1950 accounts in so far as the increased rate of income tax is chargeable on the profits and has to be deducted from the final dividend. The increased Profits Tax will affect future expansion in so far as it will extract from the Company's resources large sums in cash which would normally be used for increased trading.

The Company's Order Book is satisfactory and good progress is being made in the development of our Markets abroad. Owing to certain legal difficulties it has not been possible to complete the formation of a subsidiary company in India but this will be arranged in due course.

The rearmament programme did not affect the Company's operations to any extent in 1950 but certain classes of raw material are becoming increasingly scarce resulting in orders having to be placed in larger quantities and for longer deliveries even in 1952. While we are at present partly occupied with the supply of some of our standard products to Government Departments it may be necessary to undertake certain armament work but in view of our past experience we are well placed to give any assistance necessary without unduly upsetting our export programme.

The Report and Accounts were unanimously adopted.

HALKYN DISTRICT UNITED MINES LTD.

The Twenty-Third Annual General Meeting was held on Wednesday, 27th June, 1951, at the Blossoms Hotel, Chester.

Mr. E. Noel Humphreys, Chairman, presided.

The Directors' Report and Accounts for the year 1950 were submitted and approved and a maiden dividend of 10 per cent (6d. per share) was declared.

The improved trading results for the year made it possible to carry forward a credit balance of £5,316, after providing £38,000 for taxation and £10,798 for the net amount of the dividend and wiping out the deficit of £30,755 on Profit and Loss Account at the beginning of the year.

The retiring Directors, Messrs. E. Noel Humphreys (Chairman), J. C. Budd and R. W. Bankes were re-elected. The Auditor (Mr. J. W. Aldred, F.C.A.) was continued in office and a resolution duly passed regarding his remuneration.

After a lapse of eleven years without remuneration a vote to the Directors was passed in respect of the year 1950.

An Extraordinary General Meeting was held, on the conclusion of the Annual Meeting. At this Meeting revisions of Articles of Association were passed, relating to qualification and remuneration of Directors and conversion of shares to stock.

BLYVOORUITZICHT GOLD MINING CO., LTD.

(Incorporated in the Union of South Africa)

NOTICE IS HEREBY GIVEN that an Extraordinary General Meeting of Blyvooruitzicht Gold Mining Co., Ltd., will be held in the Board Room, Second Floor, The Corner House, Johannesburg, at 11 a.m. on Friday, July 20, 1951, for the purpose of considering and, if thought fit, of passing with or without modification, the following resolution as an Ordinary Resolution, namely:

"THAT pursuant to the provisions of Article 57 of the Company's Articles of Association, the Directors of the Company be and they are hereby authorized at their discretion and at such time or times and upon such terms as they may deem fit, to borrow or raise or secure the payment of any sum or sums of money which may be required for the purposes of the Company not exceeding £4,000,000 (Four million pounds) in all."

The Transfer Books and Register of Members will be closed from July 14, 1951, to July 20, 1951, both days inclusive.

By Order of the Board,

London Office,
4, London Wall Buildings,
E.C.2.

A. MOIR & CO.,
London Secretaries.

June 28, 1951.

DIVIDENDS

Anglo-Iranian Oil 25% *i* (July 31)
Bangrin Tin 15% *i* (July 28)
Barrow, Hepburn & Gale 10% (Aug. 10)
Bisichi Tin 7½d. (July 27)
Bremang Gold Dredging 7½% (Aug. 10)
Cam & Motor Gold 18% *i*
Ex-Lands Nigeria 7.2d. (Aug. 2)
En. Transvaal Cons. Ord. 3d.
Gold & Base Metal Mines of Nigeria 15%
H. E. Proprietary 25% (July 27)
Lobitos Oilfields 17½% (July 31)
Malayan Tin Dredging 3d. *i* (July 31)
Morning Star Mines 6d. (July 27)
Rezende Mines 8½%
Sherwood Starr Gold 2½% *i*
Siamese Tin 25% *i* (July 21)
Southern Malayan Tin 1s. 3d. *i* (July 27)
South West Africa Co. 2s. *i*
Waihi Investments & Exploration 7½% (July 25)

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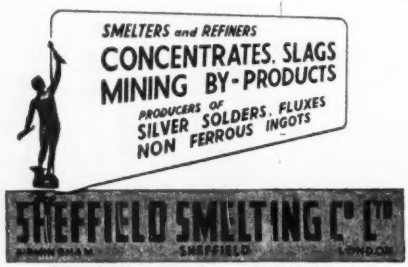

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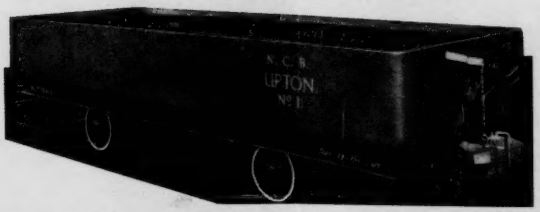

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